Supplemental Site Investigation
Champaign Former
Manufactured Gas Plant
Champaign, Illinois

July 30, 1997

Prepared for:

ILLINOIS POWER COMPANY

Decatur, Illinois

Columbia, Illinois

PHILIP ENVIRONMENTAL

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1 INTRODUCTION

Philip Services Corporation (Philip) has prepared this report for Illinois Power Company (IP) to summarize the results of supplemental site investigation activities at the Champaign Former Manufactured Gas Plant (MGP) facility located in Champaign, Illinois. The primary purpose of this investigation was to assess the extent of coal-tar impact east of the MGP site along the Sixth Street right-of-way, and determine the transport route of the coal tar. A secondary purpose of the investigation was to re-assess the contents of Gas Holder 1 (GH-1) and incorporate previously collected data from GH-1 for development of proposed interim remedial measures (IRMs). The IRM for GH-1 will include the removal and treatment of impacted materials within the holder. Potential IRMs for the remainder of the site are also discussed.

1.1 Previous Investigations

This report incorporates data previously collected at the site in addition to new data collected during a field investigation conducted in March, 1997. Investigation activities conducted at the Champaign MGP site from 1990 through 1992 are presented in detail in the two-volume remedial investigation report, "Phase II Site Investigation, Champaign Former Manufactured Gas Plant, Champaign, Illinois" (RI report), dated March 4, 1994, and prepared by Burlington Environmental, Inc. (now Philip).

1.2 Quarterly Groundwater Monitoring

Quarterly groundwater monitoring at the Champaign MGP site was initiated in the first quarter of 1996. The five quarters of groundwater monitoring data collected through February, 1997, are incorporated into this report to provide a more complete picture of coal-tar impact to groundwater.

2 INVESTIGATION PROCEDURES

The investigation was performed at the site by Philip from March 10 through 12, 1997. Three activities were conducted: Geoprobe soil sampling along the abandoned section of Sixth Street (called the Sixth Street right-of-way); test pit excavations west of the Sixth Street right-of-way and near GH-1; and sampling of the fluids contained within GH-1. The Geoprobe soil sampling was performed on March 10 and 11. The test pit excavations and sampling of GH-1 were performed on March 12.

2.1 Geoprobe Soil Sampling

To collect soil samples, one-inch-diameter, hollow-steel probe rods were driven to the desired depth using the hydraulically-powered Geoprobe system mounted on a Polaris all-terrain vehicle. Soil samples were collected with either a two-foot-long, 0.75-inch inside-diameter (ID) split-spoon sampler or a four-foot-long, 1.75-inch ID macro-core sampler. Both samplers were equipped with disposable plastic sleeves to preserve the integrity of the soil samples for visual and laboratory analysis.

Continuous soil samples were collected at ten probe hole locations (Figures 1 and 2). The deepest probe hole penetration was to a depth of 18 feet below land surface (BLS). Probe holes were numbered sequentially from CHPH-300 to CHPH-309. Samples within each probe hole were numbered sequentially starting with "-01".

Soil samples were examined in the field to identify the presence of coal tar. The samples were also identified and described by color, particle size, apparent moisture content, and apparent plasticity. Unified soil classification system (USCS) identifications were assigned to soil types based on field observations. Observations were noted on Records of Subsurface Exploration (Appendix A). The geologic descriptions and USCS soil types, and sample intervals and recovery were entered into Philip's graphic information database system (GIS/Key™) for use in data interpretation and evaluation.

Five soil samples were collected for laboratory analysis to correlate with visual coal-tar impact observations. Soil samples were collected from coal-tar impacted unconsolidated units ranging in grain size from clay to sand and gravel. The soil samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and naphthalene. The soil sample analytical results, along with brief field observations for each sample, are presented in Table 1.

2.2 Test Pit Excavations

Four test pits were excavated using a Case 580 Super-K Backhoe. The test pit locations are shown on Figures 1 and 2. Three of the test pit locations were immediately west of the Sixth Street right-of-way on IP property. The purpose of these test pits, excavated to depths of approximately 7 feet BLS, was to characterize shallow subsurface conditions along the eastern portion of the former MGP site. In addition, test pits TP-1 and TP-2 were located to assess the natural soils and fill material bordering the storm sewer that traverses the center of the site from east to west (E-W storm sewer). The E-W storm sewer and associated backfill were identified in the RI report as a potential pathway for coal-tar migration.

A fourth test pit, excavated to a depth of 3 feet BLS northeast of GH-1 and west of a suspected tar well, was used to collect approximately 1.5 cubic feet of coal-tar impacted fill material. The impacted fill material was collected for possible use in bench-scale blending tests.

Soil samples obtained from the test pits were characterized using the same methodology applied to the Geoprobe samples. Observations were noted on Records of Subsurface Exploration (Appendix A). One soil sample, CHTP-01, was collected from TP-1 for laboratory analysis of BTEX and naphthalene. The analytical results are presented in Table 1.

2.3 GH-1 Sampling

GH-1 was sampled at two depths using a 2 by 2 foot access port (south port) located along the south edge of the vessel. Figures 1 and 9 show the location of the sample collected from the south port, and Figure 3 shows the approximate locations of the two samples in cross-sectional view. The samples were collected to assess potential treatment and disposal options.

The first sample, GH1-03, was obtained at a depth of 3 feet BLS using a peristaltic pump. The sample consisted of relatively clear water with no apparent visible coal-tar droplets or oily sheen and a very mild coal-tar odor. This sample was collected for laboratory analysis of BTEX, metals, total suspended solids (TSS), oil & grease, and biochemical oxygen demand (BOD). The analytical results for the water sample are presented in Table 2.

The second sample, GH1-12, was obtained at a depth of 10 to 12 feet BLS using a 5-gallon open-ended plastic container attached to a 15-foot-long piece of 1-inch diameter PVC casing. The sample container was advanced downward into the holder until refusal was met at approximately 12 feet BLS. Although the top of the container was open, the higher density coal-tar/water emulsion near the base of the holder displaced the lower density water that

filled the container at shallower depths. The sample removed from the container for laboratory analysis consisted of a viscous, dense black coal-tar/water emulsion with high solids content.

Sampling methods that proved to be ineffective for acquiring the more dense and viscous coal-tar/water emulsion found deeper in the holder included the peristaltic pump, a positive displacement pump, and a sludge sampler with a pressure-activated valve (Sludge Judge®).

Sample GH1-12 was submitted for laboratory analysis to determine the following parameters: volatile organic compounds (VOCs); semi-volatile organic compounds (SVOCs); metals; Toxicity Characteristic Leachate Procedure (TCLP) VOCs; TCLP SVOCs; TCLP cadmium, chromium, and lead; reactivity (cyanide and sulfide); ignitability; corrosivity (pH); ash; BTU value; percent moisture; specific gravity; chemical oxygen demand (COD); sulfate; and, total organic halogens (TOX). The analytical results for the coal-tar/water emulsion sample are provided in Table 3.

2.4 Laboratory Analytical Testing

Soil and water samples were submitted to Zenon Laboratories (Zenon) in Burlington, Ontario for laboratory analysis. Appropriate chain-of-custody forms were completed for each sample. The sample containers were placed in coolers and maintained at 4° C. The coolers were shipped via overnight delivery to Zenon within two to three days of sample collection.

One exception to the protocol outlined above was for the analysis of BOD for water sample GH1-3 from GH-1. Since the holding time for BOD is only 48 hours, the BOD portion of sample GH1-3 was delivered to American Analytical Chemistry Laboratories in Savoy, Illinois, on the same day as it was collected.

Chain-of-custody forms and laboratory certificates of analysis are provided in Appendix B.

3 DELINEATION OF COAL-TAR MIGRATION PATHWAYS

The extent of coal-tar impact along the Sixth Street right-of-way became a concern upon the discovery of coal tar within Monitoring Well UMW-103 (monitoring well location shown on Figure 5) during the August, 1996, quarterly groundwater monitoring event. Prior groundwater monitoring events had not identified visible coal-tar impact in monitoring wells along the eastern portion of the MGP site. In order to delineate the pathway by which coal tar has migrated as far east as UMW-103, soil and groundwater data were collected for evaluation. In addition, the potential for the E-W storm sewer to act as a conduit for coal-tar migration was assessed.

3.1 Extent of Impact in Soil

The soil sample analytical results and geologic description of the sampled intervals along the Sixth Street right-of-way are provided in Table 1. Figure 3 shows the maximum total BTEX and naphthalene concentrations at each of the sampling locations in plan view and Figure 4 shows the same parameters in cross-sectional view from north to south.

No visible evidence of coal-tar impact to soil samples was identified at probe holes CHPH-304, -305, and -306, located in the southern half of the Sixth Street right-of-way. No detectable concentrations of BTEX occurred in a soil sample collected from a sand layer at a depth of 15 feet BLS at Probe Hole CHPH-306. However, the naphthalene concentration in this soil sample was 0.014 mg/kg.

Soil samples collected from the northern half of the Sixth Street right-of-way had either visible or olfactory evidence of coal-tar impact. Soil samples collected from probe holes CHPH-300 through CHPH-303 were primarily impacted with coal tar from 10 to 15 feet BLS.

The highest concentration of BTEX in samples collected from the north end of the Sixth Street right-of-way occurred in Sample CHPH300-05, collected from a sand and gravel layer at 11 feet BLS. This sample, located within a few feet of UMW-103, had benzene and total BTEX concentrations of 0.040 and 19.013 mg/kg, respectively. Naphthalene concentration in the same sample was 0.20 mg/kg.

Two soil samples were collected from Probe Hole CHPH-303 at the north end of the Sixth Street right-of-way between 10 and 15 feet BLS. The shallower sample had no detectable BTEX or naphthalene concentrations and the deeper sample had total BTEX and naphthalene concentrations of 0.026 and 0.056 mg/kg, respectively.

Probe holes CHPH-307 through -309 and the test pits are discussed Section 3.3.2, the assessment of the E-W storm sewer.

Other than the one soil sample collected from Probe Hole CHPH-300 at 11 feet BLS, none of the soil samples collected from probe holes or the test pits along the Sixth Street right-of-way, had detectable concentrations of benzene.

Based on the soil data collected from the probe holes along the Sixth Street right-of-way, the primary zone of coal-tar impact is between 10 and 15 feet BLS within thin sand and gravel lenses and fractures in the silty clay. The most highly impacted area east of the former MGP site is close to the center of the right-of-way, near the location of Probe Hole CHPH-300 and Monitoring Well UMW-103.

Visible coal-tar impact, where present, occurred within permeable sand layers and fractures of the silty clay. Coal tar occurred as small blebs and anastamosing fingers within the sand layers, most of which were less than two inches in thickness.

3.2 Extent of Impact in Groundwater

Groundwater levels in the shallow monitoring wells at the Champaign MGP site during 1996 ranged from 3 to 9 feet BLS. The shallow groundwater flow direction is radially away from the central portion of the MGP site, primarily towards the north, west, and south (Figure 5). The groundwater flow direction has remained essentially unchanged from earlier groundwater-level surveys.

BTEX and SVOC data for groundwater samples, both historic and for the past year, are presented in tables 4 and 5, respectively. The only significant change in either BTEX or SVOC concentrations in groundwater samples has occurred at Monitoring Well UMW-103, located east of the MGP property boundary along the Sixth Street right-of-way. Although both BTEX and polynuclear aromatic hydrocarbon (PAH) concentrations during the first two quarters of 1996 were relatively low, they increased substantially in the third quarter due to seepage of coal tar into the well. Currently, the thickness of coal tar in the base of UMW-103 is 0.7 feet.

The maximum benzene, naphthalene, and total PAH concentrations measured in each monitoring well during 1996 are shown in figures 6, 7, and 8, respectively. It can be seen from these figures that the outer perimeter monitoring wells all have non-detectable groundwater concentrations for benzene and naphthalene or total PAHs. The outer boundary of shallow groundwater impacted with BTEX and PAHs has remained relatively unchanged since the site was first investigated in the early 1990's.

Along the Sixth Street right-of-way, both the northernmost and southernmost monitoring wells, UMW-102 and UMW-104, respectively, have no detectable BTEX and naphthalene or PAH constituents in groundwater samples. Similarly, BTEX and naphthalene have not been detected in groundwater samples collected from Monitoring Well UMW-112 located to the east.

Based on data collected from monitoring wells east of the former MGP site, the leading edge of coal tar within the soil, and dissolved phase contamination within groundwater, is close to the center of the Sixth Street right-of-way near Monitoring Well UMW-103.

3.3 Influence of E-W Storm Sewer on Coal-Tar Migration

The storm sewer and associated backfill that traverses the site from east to west was investigated as a potential conduit for coal-tar migration. The RI report was reviewed prior to the beginning of the supplemental investigation. Based on the results of the Phase II investigation, summarized in Section 3.3.1, three probe holes and two test pits were placed alongside the eastern terminus of the E-W storm sewer and backfill to further evaluate its potential as a conduit for contaminant migration. A third test pit was also excavated north of the E-W storm sewer.

3.3.1 Phase II Investigation Sewer Sampling Results

The E-W storm sewer that traverses the site from east to west was identified in the Phase II Investigation Report as a conduit for impacted water and possibly sediment to the storm sewer that runs from north to south (N-S sewer) under North Fifth Street. Water flow within the E-W storm sewer at the time of the Phase II study, and on March 6, 1997, was from east to west, towards the N-S storm sewer..

Although low levels of PAHs were detected in a water sample from the western E-W storm sewer drain along the Sixth Street right-of-way during the Phase II investigation, no visible coal tar or coal-tar odors were detected.

The total PAH concentration in a water sample collected from a drain at the eastern end of the E-W storm sewer in December, 1990, was 127 ug/L. Naphthalene was below the method detection limit of 10 ug/L. BTEX compounds in the sample were all below the method detection limit of 5 ug/L.

The water sample obtained from the western end of the E-W storm sewer had significantly higher concentrations of PAHs than the eastern end. Total PAHs, naphthalene, and total BTEX concentrations in the water sample from the western end of the E-W storm sewer, collected in December, 1990, were

1,025, 470, and 188 ug/L, respectively. In addition, coal-tar odors emanate from the E-W storm sewer drain located closest to the site entrance gate along Fifth Street.

The RI report identified capping of the western end of the E-W storm sewer as a potential remedial measure for preventing continued discharge of impacted water to the City of Champaign's sewer system.

3.3.2 Supplemental Assessment of E-W Storm Sewer

Three probe holes, CHPH-307, -308, and -309, were placed along the assumed E-W storm sewer line on the west side of the Sixth Street right-of-way. In addition, test pits CHTP-01 and CHTP-02 were excavated north and south of the E-W storm sewer (Figures 1 and 2) to evaluate its potential as a migration pathway for coal tar or coal-tar impacted sediment and water.

An 8-inch diameter clay tile with an invert depth of approximately 56 inches BLS was intercepted in Test Pit CHTP-01 and was assumed to be the E-W storm sewer. The pipe contained water with minor coal-tar impact. Based on the soil samples collected adjacent to the sewer line, the native clay soil near the sewer line is impacted with a viscous coal tar. Coal-tar impact in the clay ranges from coal tar in fractures and voids to nearly saturated. The backfill material around the sewer consisted of sand with no visible coal-tar impact.

The soil sample with the largest amount of coal tar, collected between 4 and 6 feet BLS from Probe Hole CHPH-307, had total BTEX and naphthalene concentrations of 5.119 and 0.81 mg/kg, respectively (Table 1). A soil sample collected below 6 feet BLS from Probe Hole CHPH-309 had no visible or olfactory evidence of coal tar.

Test pits CHTP-01 and CHTP-02 were excavated to depths of 7 feet BLS adjacent to the E-W storm sewer. The natural clay and silty clay adjacent to and beneath the sewer backfill contained a viscous coal tar within an extensive network of fractures, root channels, and other macropores. The clay was impacted with coal tar beginning at a depth of approximately 5 feet BLS and continuing to the base of the excavation. Total BTEX and naphthalene concentrations for this material from Test Pit CHTP-1 were 7.669 and 2.4 mg/kg, respectively (Table 1).

Test Pit CHTP-02, excavated south of the sewer line, provided evidence of three additional east-west utility conduits across the former MGP site. An 8-inch diameter cast iron pipe with an invert of 56 inches BLS was located four feet south of the E-W storm sewer line. This pipe, abandoned in place, was filled with clear water with no visual evidence of coal-tar impact. In addition, two metal 1.5-inch diameter pipes with inverts of approximately 32 and 50

inches BLS, were located six feet south of the E-W storm sewer line. The two metal pipes run parallel to the E-W storm sewer line and cast iron pipe.

The amount of coal tar within the impacted clay and silty clay did not appear to change with distance from the E-W storm sewer line, suggesting that the sewer and backfill may not be the principal path of coal-tar migration within the clay. In order to confirm this, a third test pit, CHTP-03, was excavated approximately 35 feet north of the E-W storm sewer line and test pits CHTP-01 and CHTP-02.

Test Pit CHTP-03 contained clay with extensive fractures, root fragments, and macropores heavily impacted with coal tar beginning at approximately 5 feet BLS and continuing to the base of the excavation at 7 feet BLS. The distribution and concentration of coal tar within the clay and silty clay was similar to that observed at test pits CHTP-01 and CHTP-02.

Based on the distribution of coal-tar impact within the natural materials both adjacent to and distant from the E-W storm sewer, and the absence of visible coal-tar impact in the sand backfill, the sewer line and backfill do not appear to be primary conduits for coal-tar migration across the site. However, water from the E-W storm sewer at Test Pit CHTP-01 did appear to contain minor coal-tar impact, supporting data collected during the Phase II investigation that identified the E-W storm sewer as a conduit for coal-tar impacted water off site. Coal-tar migration pathways in the soil appear to be through sand lenses, macropores and fractures.

4 GH-1 ASSESSMENT

A plan view and cross-sectional view of GH-1 (Figure 9) was drawn based on a 1924 plant drawing and recent measurements. The 1924 plant drawing showed the changes made to convert GH-1 from an in-ground gas holder to a tar well/separator. Changes included the addition of internal baffling and construction of the still-existing concrete lid. As shown on the figure, the holder has a sloped concrete floor, deepest at the perimeter (16.5 feet) and shallowest in the center (13 feet). The outside diameter of the holder is 49 feet.

The contents of GH-1 were initially assessed during the Phase II investigation conducted during 1990 and 1991. Subsequently, during 1992, IP conducted a dewatering test of the gas holder. An evaluation of the gas holder contents is provided at the end of this section, which utilizes the prior information about the gas holder and the most recent analytical data of the liquids within the holder.

4.1 Phase II Investigation Results

The contents of GH-1 were initially sampled and analyzed as part of the Phase II investigation. Measurement and collection of fluids within the gas holder were made through access ports located around the perimeter of the holder. The water-level within the holder was within one foot of the top of the concrete lid. Approximately 10 feet of coal-tar impacted water was found to occur above an emulsion layer of coal tar and water. No pure tar layer was found, although the deepest part of the holder was not accessible to sampling equipment.

Laboratory analytical results from 1990 and 1991 for both the water layer and the underlying coal-tar/water emulsion layer are provided in Table 6. Results are extremely variable, but Sample CGH/TW-1-LCT, collected from the holder at a depth of 10 to 12 feet, indicates that at least a portion of the material is hazardous by toxicity characteristic for benzene. The TCLP concentration for benzene in this sample is 21,000 ug/L.

One other noteworthy characteristic of the coal-tar/water emulsion layer is the specific heat value of 8,272 British Thermal Units per pound (BTU/lb.) for Sample CGH/TW-1LCT-001, collected from the holder at a depth of 7 to 10 feet. The oil content of this sample was approximately 53 percent, while the water content was 44 percent.

4.2 Dewatering Test Results

IP performed a dewatering test of GH-1 in July and August of 1992. The top 4.2 feet of water was pumped out through a carbon treatment system and discharged to the sanitary sewer system and ultimately the Publicly Owned Treatment Works (POTW) of the Champaign-Urbana Sanitary Sewer District. The total amount discharged was 52,789 gallons. Volume calculations for the equivalent drawdown showed that 55,650 gallons should have been pumped. The discrepancy between the actual pumped volume and the calculated volume based on drawdown and holder dimensions may be due to internal structures not accounted for, or it may reflect measurement variability (a reasonable 5 percent error). Apparently the rate of water infiltration into the holder at the time of the test was low (if any); otherwise, the pumped volume of water would have been closer to or in excess of the calculated volume.

An influent analysis of the water pumped from the gas holder prior to carbon treatment had benzene, toluene, ethylbenzene and total xylenes results of 920, 500, 230, and 530 ug/L, respectively. The effluent analysis following carbon treatment was non-detect for all. The Champaign POTW discharge permit concentrations for BTEX, averaged on a monthly basis, were 50, 100, 100, and 100 ug/L, respectively, none of which were exceeded during the dewatering test.

4.3 Laboratory Analytical Test Results

The analytical results for the most recent water sample collected from GH-1 at a depth of 3 feet, and the coal-tar/water emulsion sample collected at a depth of 10 to 12 feet, are provided in tables 2 and 3, respectively.

The water sample analytical results for Sample GH1-03 are comparable to the results from prior tests conducted in 1990 and 1991. Benzene and total BTEX concentrations in the water sample were 10 and 31.5 ug/L, respectively, below the POTW permit requirements listed above. All other parameters are also below POTW maximum concentration limits.

The coal-tar/water emulsion sample results for Sample GH1-12 show that the sample is hazardous for TCLP benzene at a concentration of 3,000 ug/L. The sample contains 22 percent moisture and has a specific heat value of 3,600 BTUs/lb.

4.4 Evaluation of GH-1

GH-1 contains an upper layer of contaminated water that begins at 0.7 feet below the top of the concrete lid and continues to an estimated depth of 7 to 10 feet. This upper layer of water, which becomes increasingly contaminated with depth, is underlain by a coal-tar/water emulsion layer. Three coal-tar/water emulsion samples analyzed for water or moisture content (tables 3 and 6) ranged from 22 to 82 percent. Percent solids in three samples collected from the holder between the depths of 7 and 10 feet ranged from 3 to 7 percent. Most of the coal-tar/water emulsion layer appears to consist of water and coal-tar oils.

The greatest uncertainty about the materials within the gas holder is found beneath the coal-tar/water emulsion layer. No samples have been obtained below a depth of about 12 feet to the maximum estimated holder depth of 16.5 feet BLS. Metal rods pushed into the holder at the northeast port (Figure 9) met refusal at a depth of 13 feet. The materials at the base of the holder are expected to consist of cinders and coal tar. Other solid materials of unknown composition may also be present at the base of the holder.

5 INTERIM REMEDIAL ACTION ALTERNATIVES

The primary goal of interim remedial measures (IRMs) at the Champaign MGP site is to limit the migration of coal-tar impact within the subsurface. Based on previous data collected at the Champaign MGP site and data collected during this supplementary investigation, several general remedial action alternatives for dealing with coal-tar migration and groundwater contamination are discussed below

Interim remedial actions may include, but are not limited to:

- removal of coal-tar impacted materials in the gas holder;
- removal of coal-tar impacted materials from tar wells and other suspected source areas;
- containment and removal of subsurface coal tar at downgradient locations;
- groundwater contaminant plume migration control; and
- plugging and capping the E-W storm sewer.

Removal of coal-tar contaminated materials from the gas holder and other source areas will prevent the movement of additional coal tar into the subsurface. Migration of coal tar in downgradient directions can be restricted through containment and removal. Restricting coal-tar migration will limit the spread of dissolved phase groundwater contamination downgradient of the coal-tar plume. Finally, capping the E-W storm sewer will block a known pathway for off-site migration of coal-tar impacted water. Subsequent to IRMs, an assessment will be performed to evaluate any remaining risk at the site due to former MGP activities and to evaluate the need for engineered barriers.

5.1 Site Synopsis

A brief synopsis of site conditions and coal-tar impact to the site has been included to facilitate evaluation of the potential IRMs. The synopsis is based on the findings of the RI report and the current supplemental investigation.

The major geologic units at the site, in descending order, are surficial fill, weathered till, unweathered till and a silty sand member of the Glasford Formation. The till contains thin discontinuous sand and gravel lenses. Two groundwater systems are present: a shallower system in the fill and weathered till, and a deeper system in the Glasford Formation at a depth of about 115 to 120 feet BLS. Groundwater flow in the shallow system appears to be to the north, west and south beneath the site.

Coal-tar impact has been found in the soil beneath the northern two-thirds of the site, as well as off-site to the north, east and west. The maximum depth of coal-tar residues found is 28 feet BLS near GH-1. Residues have spread in a generally symmetric pattern from the area of GH-1 and the tar wells.

The structure of GH-1 appears to be intact. GH-1 contains a layer of coal-tar impacted water over a denser coal-tar/water emulsion layer. Fluid coal-tar migration has been observed off site to the north in Monitoring Well UMW-101, and to the east in Monitoring Well UMW-103.

The shallow groundwater on site and off site to the north, east and west has been impacted by coal-tar and petroleum hydrocarbons. Evidence of impact to the deeper system has not been found.

Coal-tar residues have not been detected during monitoring of air and water in basements of the houses adjacent to the site. All residences use municipally-supplied water; no groundwater users have been identified in the vicinity of the site.

Coal-tar migration pathways at the site appear to be through discontinuous sand and gravel lenses, typically less than two inches in thickness, and through macropores and fractures in the weathered till. The E-W storm sewer does not appear to be a migration pathway for coal tar, but is a route for coal-tar contaminated water to travel off site into the City of Champaign's sewer system.

5.2 Removal and Treatment of Impacted Materials from GH-1

GH-1 contains impacted water, coal-tar/water emulsion, coal-tar impacted sediments, and possibly other solid materials such as brick, metal, or concrete. Each wastestream requires different handling and disposal methods, which are reviewed below.

5.2.1 Impacted Water Removal and Treatment

Lightly impacted water, down to approximately 7 to 10 feet BLS, will be discharged to the sanitary sewer system and Champaign POTW following treatment. The treatment method under consideration for this water is phase separation followed by carbon adsorption. The solids and oil/grease content of this water increase with increasing depth. Therefore, more complex methods of treatment may be required in the lower part of this zone. Based on results of the 1992 dewatering test, BTEX concentrations following treatment of the lightly impacted water should be below detection limits.

The Urbana-Champaign Sanitary District issued a permit for disposal of treated water from the gas holder during the dewatering test conducted by IP in 1992 (see Section 4.2). The permit expired on July 31, 1995. The original permit application submitted by IP included the analyses of raw water from the holder for a large number of parameters. However, the only parameters monitored on a weekly basis during the dewatering test, per requirements of the sanitary district, were BTEX.

Based on discussions with the sanitary district during March, 1997, a new permit for discharge of treated water to the POTW will be issued; analytical results for BTEX will be included in the permit renewal application. The new permit will be issued based on BTEX results assuming that the conditions within GH-1 and the contents of the holder have not changed since the previous permit application was accepted.

5.2.2 Coal-Tar/Water Emulsion Removal and Treatment

This material is classified as a characteristic hazardous waste because of benzene and is not suitable for treatment using the method described above. A cost evaluation of suitable disposal options should be performed to aid decision making. Disposal at the Baldwin Thermal Treatment Facility (BTT) following blending and solidification would be the baseline cost for comparison purposes. Other options would include thermal treatment at a cement kiln, hazardous waste incineration, fuel blending, and disposal at a hazardous waste landfill without further stabilization or treatment. Dewatering and volume reduction using a centrifuge, press, or chemical stabilization prior to disposal as a hazardous waste could also be considered.

5.2.3 Sediment Removal and Disposal

Some options described above would also be available for the tarry sediment at the bottom of the gas holder. However, it is most likely that blending and solidification for disposal at BTT would be the most cost effective.

5.2.4 Gas Holder Structural and Demolition Debris

Demolition debris from the concrete lid and internal structures of GH-1 would be disposed as a special waste at an IP-approved landfill. The bottom part of GH-1 could potentially contain debris such as metal that is unacceptable to BTT, which would also be sent to a special waste landfill. The walls and floor of GH-1 would be left intact.

5.3 Removal and Treatment of Impacted Materials from Tar Wells and Other Source Areas

According to historical drawings, there were eight tar wells and one tar separator at various locations in the northern half of the site. Because GH-1 appears to be relatively intact, the tar wells are considered to be likely sources of coal tar in the subsurface soil. Locating and investigating the tar wells was not part of the scope of work of the supplemental investigation. However, the tar wells should be located and any coal tar or coal-tar impacted materials found within should be blended on site, tested and transported to BTT for disposal.

5.4 Subsurface Coal-Tar Containment and Removal

Migration of coal tar in downgradient directions can be restricted through containment and removal. The heterogeneity and low permeability of the geologic materials, in addition to the relatively low concentrations of coal tar within those materials, may limit the effectiveness of active coal-tar recovery systems at the Champaign MGP site. Active coal-tar recovery encompasses a wide range of technologies aimed at enhancing the mobility and recovery rate of coal tar. Several passive methods for containing and/or removing coal tar are available, including collection trenches, in-situ stabilization/solidification, cut-off walls, and reactive walls.

5.5 Groundwater Contaminant Plume Migration Control

The RI report and subsequent monitoring indicate off-site migration of contaminated groundwater has occurred to the north, east and west. However, the concentrations of organic parameters within groundwater have not changed significantly since the Phase II investigation was conducted in 1990 and 1991, except in Monitoring Well UNW-103. In addition, the outer boundary of impacted groundwater has not changed significantly.

To satisfy regulatory requirements, contaminated groundwater may have to be controlled from migrating off site and removed where it presently exists off

site. The migration of dissolved phase contamination within groundwater at this site can be reduced through containment of coal-tar migration and source removal. A hydraulic barrier can also be created using low volume pumping wells or a trench. Another option would be installation or injection of Oxygen Release Compound (ORC®) to form a migration barrier near the site boundaries. ORC is a relatively new technology for enhanced intrinsic bioremediation. Philip is currently evaluating the possibility of an on-site pilot test to demonstrate its effectiveness.

5.6 Capping of the E-W Storm Sewer

The E-W storm sewer has been identified as a migration route for coal-tar contaminated water and sediments off site to the west to the N-S sewer along Fifth Street. Contaminant migration eastward within the sewer is minor. There is no evidence of the sewer backfill acting as a primary conduit for coal-tar migration. Capping the sewer will prevent migration of coal-tar contaminated water and sediments off-site into the Champaign sewer system.

List of References

Burlington Environmental Inc. 1994. Phase II Site Investigation, Champaign Former Manufactured Gas Plant, Champaign, Illinois. March 4.

List of Tables

Table 1

Soil Sample Analytical Results and Geologic Description

Supplemental Site Investigation
Champaign Former Manufactured Gas Plant
Champaign, Illinois

March 10 through 12, 1997

Location	Sample Number	Depth (feet)	Concentration (milligrams per kilogram)						Sample Description
			Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	Naphthalene	
CHPH-300	CHPH300-05	11	0.040	0.073	9.5	9.4	19.013	0.20	Medium to coarse sand with gravel; coal-tar ganglia present at 11.1 to 11.3 feet.
CHPH-303	CHPH303-05	10	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	NA	ND(0.005)	Clayey sand and gravel with coal-tar blebs.
CHPH-303	CHPH303-06	15	ND(0.005)	ND(0.005)	0.005	0.021	0.026	0.056	Medium to coarse sand and gravel with coal-tar ganglia.
CHPH-306	CHPH306-03	15	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	NA	0.014	Medium to coarse sand with clay, trace gravel.
CHPH-307	CHPH307-01	5	ND(0.05)	0.059	4.5	0.56	5.119	0.81	Light gray clay with brown mottling; saturated with coal tar on half of sample closer to storm-water sewer.
CHTP-1	CHTP-01	5	ND(0.05)	0.069	6.5	1.1	7.669	2.4	Light gray clay with extensive fractures, root fragments, and macropores filled with coal tar.

BTEX Benzene, toluene, ethylbenzene, and total xylenes.
NA Not applicable.
ND Not detected at detection limit in parentheses.

Table 2

Analytical Results for Water Sample GH1-03 from Gas Holder GH-1

Supplemental Site Investigation
Champaign Former Manufactured Gas Plant
Champaign, Illinois

March 10 through 12, 1997

Compound	Concentration (ug/L)
Benzene	10.0
Toluene	3.0
Ethylbenzene	ND(1.0)
Xylenes	18.5
Total BTEX	*31.5*

Compound	Concentration (mg/L)
Biochemical Oxygen Demand	10.0
Total Suspended Solids	7.0
Oil & Grease	5.0
Cyanide	0.032
Arsenic	ND(0.0020)
Barium	0.018
Cadmium	ND(0.002)
Copper	0.008
Iron	1.8
Lead	0.0067
Manganese	0.11
Mercury	ND(0.00005)
Nickel	ND(0.011)
Selenium	ND(0.0020)
Silver	ND(0.006)
Zinc	0.15

BTEX Benzene, toluene, ethylbenzene, and total xylenes.
ug/L Micrograms per liter.
ND Not detected at detection limit in parentheses.
mg/L Milligrams per liter.

Table 3

Analytical Results for Coal-Tar / Water Emulsion Sample GH1-12 from Gas Holder GH-1

Supplemental Site Investigation
Champaign Former Manufactured Gas Plant
Champaign, Illinois

March 10 through 12, 1997

Parameter	Value	Units
pH	6.41	S.U.
Ash (550 deg C)	1.1	%
BTU (Specific Heat)	3,600	btu/lb.
Moisture	22	%
Specific Gravity	0.99	g/cc
Sulphide	100	mg/kg
Cyanide (total)	2.3	mg/kg
Sulfur (as Sulphate)	0.29	%
Total Organic Halogens (TOX)	ND (5)	mg/kg
Ignitability	>200	deg F
Chemical Oxygen Demand (COD)	*	

Volatiles Organic Compounds (VOCs) (detected compounds)	Concentration (mg/kg)
Acetone	27
Benzene	380
2-Butanone	57
1,4-Dichlorobenzene	2.6
1,2-dichloroethane	8.1
Ethylbenzene	450
Toluene	550
Xylenes (Total)	570
Total BTEX	*1,950*
Total VOCs	*2,045*

Semi-Volatiles Organic Compounds (SVOCs) (detected compounds)	Concentration (mg/kg)
Naphthalene	49,000
Acenaphthylene	9,200
Acenaphthene	7,300
Fluorene	9,500
Phenanthrene	30,000
Anthracene	6,400
Fluoranthene	7,600
Pyrene	15,000
Benzo(a)anthracene	4,400
Chrysene	4,200
Bis(2-ethylhexyl)phthlate	270
Benzo(b)fluoranthene	1,900
Benzo(k)fluoranthene	1,700
Benzo(a)pyrene	3,400
Indeno(1,2,3-cd)pyrene	1,200
Dibenzo(a,h)anthracene	310
Benzo(ghi)perylene	1,300
2-Methylnaphthalene	37,000
Dibenzofuran	2,500
Total SVOCs	192,180

BTEX Benzene, toluene, ethylbenzene, and total xylenes.
mg/kg milligrams per kilogram
ND Not detected at detection limit in parentheses.
ug/L micrograms per liter
* Lab note - COD analysis was not performed as the sample is 99% volatile organics.

Table 3, Continued

Analytical Results for Coal-Tar / Water Emulsion Sample GH1-12 from Gas Holder GH-1

Supplemental Site Investigation
Champaign Former Manufactured Gas Plant
Champaign, Illinois

March 10 through 12, 1997

Metals	Concentration (mg/kg)
Arsenic	3.2
Barium	3.8
Cadmium	1.4
Copper	ND (10)
Iron	960
Lead	93
Manganese	ND(10)
Mercury	ND(0.4)
Nickel	ND(10)
Selenium	0.8
Silver	ND(1.0)
Sulphur	1,900
Zinc	160

TCLP Volatiles (detected compounds)	Concentration (ug/L)
Benzene	3,000
Chloroform[1]	16
1,2-Dichloroethane	68
1,4-Dichlorobenzene[1]	13

TCLP Semi-Volatiles (detected compounds)	Concentration (ug/L)
o-Cresol	270
m&p Cresol	310

TCLP Metals	Concentration (mg/L)
Cadmium	ND(0.002)
Chromium	ND(0.004)
Lead	ND(0.022)

BTEX	Benzene, toluene, ethylbenzene, and total xylenes.
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ND	Not detected at detection limit in parentheses.
ug/L	micrograms per liter
1	detected at higher concentrations in Method Blank

Table 4
Prior Groundwater Sample Analytical Data:
BTEX and Naphthalene

Illinois Power Company
Champaign Former MGP Site
Champaign, Illinois

Monitoring Well	Sampling Date	Concentration ug/L					
		Benzene	Ethylbenzene	Toluene	Xylenes (Total)	Total BTEX	Naphthalene
UMW-101	12/17/90 1	1,100	790	470	850	3,210	1,500
	01/24/92 1,2	14,000	430,000	61,000	590,000	1,095,000	--
	02/15/96 1	2,060	1,440	820	1,510	5,830	5,400
UMW-102	12/17/90	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	01/24/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/07/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/13/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(10)
	05/07/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	08/06/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	11/04/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	02/03/97	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
UMW-103	12/16/90	120	440	22	400	982	2,400
	01/24/90	88	250	13	NA	351	450
	01/07/93	130	290	17	150	587	15
	02/13/96	12	151	4.7	87.7	255.4	100
	02/13/96 d	13.8	157	4.8	92.4	268	174
	05/08/96	26.4	173	5.7	85.2	290.3	77
	08/06/96 1	82.2	550	10.9 J	410	1,053.1	2,200
UMW-104	12/16/90	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	01/06/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/13/96	ND(1)	ND(1)	ND(1)	ND(1)	--	ND(1)
UMW-105	12/16/90	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	01/21/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/05/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/13/96	ND(1)	ND(1)	ND(1)	ND(1)	--	ND(1)
UMW-106	12/16/90	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	01/21/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/08/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/12/96	ND(1)	ND(1)	ND(1)	ND(1)	--	ND(1)
UMW-107	12/16/90	3,600	56	27	80	3,763	17
	01/23/92	4,800	60	30	NA	4,890	63
	02/14/96	3,860	74.6	16.2	114	4,064.8	75.3
	05/08/96	3,150	61.4	12.9	93.8	3,318.1	65
	08/06/96	1,630	ND(50)	ND(50)	53.5	1,683.5	62
	11/04/96	1,710	54.6	11	98.3	1,873.9	74
	02/04/97	2,820	79.5 J	ND(125)	114 J	3,013.5	75.3
	02/04/97 d	3,060	84.8 J	ND(125)	120 J	3,264.8	82.1

ug/L	Micrograms per liter.
NA	Not Analyzed.
ND	Not Detected (Detection Limit).
B	Compound also found in method blank.
J	Estimated concentration below method detection limit.
d	Duplicate sample for QA/QC.
--	Not Applicable.
1	Coal tar present in the monitoring well and sample matrix.
2	Units for UMW-101 are summarized in ug/kg due to the semi-solid nature of the sample matrix.

Table 4, Continued
Prior Groundwater Sample Analytical Data:
BTEX and Naphthalene

Illinois Power Company
Champaign Former MGP Site
Champaign, Illinois

Monitoring Well	Sampling Date	Concentration ug/L					
		Benzene	Ethylbenzene	Toluene	Xylenes (Total)	Total BTEX	Naphthalene
UMW-108	12/17/90	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	01/21/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/07/93	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(0.16)
	02/12/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(10)
	05/07/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	05/07/96 d	ND(5)	ND(5)	ND(5)	ND(5)	--	4.3 J
	08/06/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	11/04/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	02/03/97	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
UMW-109	01/21/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/05/93	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(0.16)
	02/14/96	ND(1)	ND(1)	ND(1)	ND(1)	--	ND(1)
	02/14/96 d	ND(1)	ND(1)	ND(1)	ND(1)	--	ND(1)
UMW-110	12/16/90	83	150	ND(5)	120	353	630
	01/25/92	120	210	8	NA	338	1,900
	01/06/93	53	210	ND(5)	180	443	ND(0.16)
	02/15/96	27.1	50.7	2.5	63.2	143.5	149
UMW-111	12/17/90	ND(5)	ND(5)	7	ND(5)	7	NA
	01/21/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/05/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/14/96	ND(1)	ND(1)	0.6 J	ND(1)	0.6	ND(1)
UMW-112	12/16/90	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	01/21/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/07/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/13/96	ND(1)	ND(1)	ND(1)	ND(1)	--	ND(1)
	11/04/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	02/03/97	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
UMW-113	01/23/92	ND(5)	ND(5)	ND(5)	NA	--	ND(10)
	01/08/93	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(0.16)
	02/13/96	ND(1)	ND(1)	0.62 J	1.48	2.10	ND(1)
UMW-114	01/23/92	3,300	1,800	400	NA	5,500	6,300
	01/08/93	2,500	1,100	160	760	4,520	4,200
	02/14/96	1,480	1,340	40.9	675	3,535.9	3,490
	05/07/96	1,510	1,330	36 J	640	3,516.0	1,100
	08/07/96	1,800	1,440	34.4 J	657	3,931.4	2,200
	11/05/96	1,600	1,620	38.8 J	736	3,994.8	2,300
	02/03/97	1,430	1,330	47.3 J	622	3,429.3	1,700

ug/L	Micrograms per liter.
NA	Not Analyzed.
ND	Not Detected (Detection Limit).
B	Compound also found in method blank.
J	Estimated concentration below method detection limit.
d	Duplicate sample for QA/QC.
--	Not Applicable.
1	Coal tar present in the monitoring well and sample matrix.
2	Units for UMW-101 are summarized in ug/kg due to the semi-solid nature of the sample matrix.

Table 4, Continued
Prior Groundwater Sample Analytical Data:
BTEX and Naphthalene

Illinois Power Company
Champaign Former MGP Site
Champaign, Illinois

Monitoring Well	Sampling Date	Concentration ug/L					
		Benzene	Ethylbenzene	Toluene	Xylenes (Total)	Total BTEX	Naphthalene
UMW-115	01/23/92	9	7	ND(5)	NA	16	NA
	01/07/93	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(0.16)
	02/14/96	24.3	ND(5)	ND(5)	ND(5)	--	ND(10)
	05/07/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	08/07/96	7	2.7 J	ND(5)	ND(5)	9.7	3.1 J
	08/07/96 d	7	2.7 J	ND(5)	ND(5)	9.7	2.9 J
	11/05/96	7.4	ND(5)	ND(5)	ND(5)	7.4	2.5 J
	02/03/97	30.8	3.6 J	ND(5)	ND(5)	34.4	ND(5)
UMW-116	01/21/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/05/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/12/96	ND(1)	ND(1)	ND(1)	ND(1)	--	ND(1)
	05/07/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	08/06/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	11/04/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	11/04/96 d	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
	02/03/97	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(5)
UMW-401	12/17/90	ND(5)	ND(5)	7	ND(5)	7	NA
	01/23/92	ND(5)	ND(5)	ND(5)	NA	--	NA
	01/01/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/15/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(10)
UMW-402	12/16/90	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	01/06/93	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	02/16/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(10)
UMW-403	12/19/90	ND(5)	ND(5)	ND(5)	ND(5)	--	NA
	01/06/93	ND(5)	ND(5)	ND(5)	ND(5)	--	0.29
	02/16/96	ND(5)	ND(5)	ND(5)	ND(5)	--	ND(10)

ug/L	Micrograms per liter.
NA	Not Analyzed.
ND	Not Detected (Detection Limit).
B	Compound also found in method blank.
J	Estimated concentration below method detection limit.
d	Duplicate sample for QA/QC.
--	Not Applicable.
1	Coal tar present in the monitoring well and sample matrix.
2	Units for UMW-101 are summarized in ug/kg due to the semi-solid nature of the sample matrix.

Table 5
Prior Groundwater Sample Analytical Data:
Semi-Volatile Organic Compounds

Illinois Power Company
Champaign Former MGP Site
Champaign, Illinois

	UMW-101				UMW-102	UMW-103						
	12/17/90	1/24/92 [1,4]	2/15/96 [2,4]	2/15/96 [3,4]	2/13/96	12/16/90	1/24/92	1/7/93	2/13/96	2/13/96	5/8/96	8/6/96 [4]
Carcinogenic PAHs (ug/L)												
Benzo(a)anthracene	ND(10)	2,600,000	34	3,740,000	ND(10)	ND(10)	ND(10)	1.1	ND(10)	ND(10)	0.13	21
Benzo(a)pyrene	ND(10)	1,100,000	30.5	3,200,000	ND(10)	ND(10)	ND(10)	1.3	ND(10)	ND(10)	0.25	26
Benzo(b)fluoranthene	ND(10)	1,000,000	15.1	1,650,000	ND(10)	ND(10)	ND(10)	0.31	ND(10)	ND(10)	0.06 J	14
Benzo(k)fluoranthene	ND(10)	250,000	17.7	1,720,000	ND(10)	ND(10)	ND(10)	0.33	ND(10)	ND(10)	0.08 J	12
Chrysene	ND(10)	1,700,000	31.8	3,660,000	ND(10)	ND(10)	ND(10)	0.42	ND(10)	ND(10)	ND(0.25)	43
Dibenzo(a,h)anthracene	ND(10)	180,000	2.6 J	345,000 J	ND(10)	ND(10)	ND(10)	ND(0.085)	ND(10)	ND(10)	ND(0.43)	25
Indeno(1,2,3-c,d)pyrene	ND(10)	940,000	8 J	971,000 J	ND(10)	ND(10)	ND(10)	0.94	ND(10)	ND(10)	0.06 J	9.1
Total Carcinogenic PAHs	0	7,770,000	140	15,286,000	0	0	0	4.4	0	0	0.58	150.1
Non-Carcinogenic PAHs (ug/L)												
Acenaphthylene	58	1,300,000	41.2	2,490,000	ND(10)	6	8 J	28	ND(10)	ND(10)	ND(0.60)	ND(6.0)
Benzo(g,h,i)perylene	ND(10)	970,000	9.3 J	1,200,000	ND(10)	ND(10)	ND(10)	0.95	ND(10)	ND(10)	ND(0.30)	24
Phenanthrene	69	1,600,000	252	23,760,000	ND(10)	65	67	32	27.4	32.4	37	ND(5.0)
Total Non-Carcinogenic PAHs	127	3,870,000	303	27,450,000	0	71	75	60.95	27.4	32.4	37	24
Non-Categorized PAHs and Other Base/Neutral SVOCs (ug/L)												
Naphthalene	1,500	20,000,000	5,400	48,050,000	ND(10)	2,400	450	15	100	174	77	2,200
Acenaphthene	110	3,800,000	234	11,370,000	ND(10)	160	140	120	70.2	75.8	110	84
Anthracene	16	2,600,000	69	6,890,000	ND(10)	14	17	6.4	3.1	3.8	3.8	120
Fluoranthene	7	3,500,000	68	7,030,000	ND(10)	ND(10)	7 J	19	ND(10)	3.4	ND(0.60)	ND(6.0)
Fluorene	54	3,700,000	93.5	6,580,000	ND(10)	56	49	48	26.1	28.9	32	140
Pyrene	10	6,200,000	86.2	9,680,000	ND(10)	7	9	12	3.5	4.2	2.3	110
Carbazole	ND(10)	ND(85)	NA	NA	NA	ND(10)	NA	ND(10)	NA	NA	NA	NA
Dibenzofuran	11	630,000	24.6	1,370,000	ND(10)	12	NA	5	3.1	3.6	NA	NA
2-Methylnaphthalene	420	13,000,000	1,010	25,140,000	ND(10)	450	NA	160	ND(10)	6.3	NA	NA
Acid-Extractable SVOCs (ug/L)												
2,4-Dimethylphenol	12	ND(85)	ND(11.8)	ND(990,000)	ND(10)				ND(10)	ND(10)	NA	NA
Phenol	9	ND(85)	ND(11.8)	ND(990,000)	ND(10)				ND(10)	ND(10)	NA	NA

NA Not Analyzed.
ND Not Detected (Detection Limit).
J Estimated concentration below method detection limit.
d Duplicate sample for QA/QC.
PAH Polyaromatic hydrocarbons.
SVOC Semi-volatile organic compounds.
ug/L Micrograms per liter.

[1] Units for UMW-101 are summarized in ug/kg due to the semi-solid nature of the sample matrix.
[2] Sample consisted of 850 mL water with the remainder an organic layer; results presented are for the water fraction in ug/L.
[3] Sample consisted of 850 mL water with the remainder an organic layer; results presented are for the organic fraction in ug/kg.
[4] Coal tar present in the monitoring well and sample matrix.

Table 5, Continued
Prior Groundwater Sample Analytical Data:
Semi-Volatile Organic Compounds

Illinois Power Company
Champaign Former MGP Site
Champaign, Illinois

	UMW-107								UMW-108		UMW-109
	12/16/90	1/23/92	2/14/96	5/8/96	8/6/96	11/4/96	2/4/97	2/4/97 d	1/7/93	2/12/96	1/5/93
Carcinogenic PAHs (ug/L)											
Benzo(a)anthracene	ND(10)	ND(10)	ND(10)	ND(0.13)	ND(0.13)	ND(0.14)	ND(1.3)	ND(1.3)	ND(0.13)	ND(10)	ND(0.13)
Benzo(a)pyrene	ND(10)	ND(10)	ND(10)	ND(0.22)	ND(0.22)	ND(0.24)	ND(2.2)	ND(2.2)	ND(0.23)	ND(10)	ND(0.23)
Benzo(b)fluoranthene	ND(10)	ND(10)	ND(10)	ND(0.18)	ND(0.18)	ND(0.20)	ND(1.8)	ND(1.8)	ND(0.029	ND(10)	0.029
Benzo(k)fluoranthene	ND(10)	ND(10)	ND(10)	ND(0.17)	ND(0.17)	ND(0.19)	ND(1.7)	ND(1.7)	ND(0.013)	ND(10)	0.032
Chrysene	ND(10)	ND(10)	ND(10)	ND(0.25)	ND(0.25)	ND(0.28)	ND(2.5)	ND(2.5)	ND(0.041)	ND(10)	ND(0.041)
Dibenzo(a,h)anthracene	ND(10)	ND(10)	ND(10)	ND(0.43)	ND(0.43)	ND(0.48)	ND(4.3)	ND(4.3)	ND(0.085)	ND(10)	ND(0.085)
Indeno(1,2,3-c,d)pyrene	ND(10)	ND(10)	ND(10)	ND(0.20)	ND(0.20)	ND(0.22)	ND(2.0)	ND(2.0)	ND(0.028)	ND(10)	0.28
Total Carcinogenic PAHs	0	0	0	0	0	0	0	0	0	0	0.341
Non-Carcinogenic PAHs (ug/L)											
Acenaphthylene	ND(10)	ND(10)	ND(10)	ND(0.60)	ND(0.60)	ND(0.67)	ND(6.0)	ND(6.0)	ND(0.25)	ND(10)	ND(0.25)
Benzo(g,h,i)perylene	ND(10)	ND(10)	ND(10)	ND(0.30)	ND(0.30)	ND(0.33)	ND(3.0)	ND(3.0)	ND(0.14)	ND(10)	ND(0.14)
Phenanthrene	ND(10)	ND(10)	ND(10)	ND(0.50)	ND(0.50)	ND(0.56)	ND(5.0)	ND(5.0)	ND(0.16)	ND(10)	ND(0.16)
Total Non-Carcinogenic PAHs	0	0	0	0	0	0	0	0	0	0	0
Non-Categorized PAHs and Other Base/Neutral SVOCs (ug/L)											
Naphthalene	17	63	75.3	65	62	74	75.3	82.1	ND(0.16)	ND(10)	ND(0.16)
Acenaphthene	ND(10)	ND(10)	ND(10)	ND(0.60)	ND(0.60)	ND(0.67)	ND(6.0)	ND(6.0)	0.77	ND(10)	ND(0.16)
Anthracene	ND(10)	ND(10)	ND(10)	ND(0.50)	ND(0.50)	ND(0.56)	ND(5.0)	ND(5.0)	ND(0.021)	ND(10)	ND(0.021)
Fluoranthene	ND(10)	ND(10)	ND(10)	ND(0.60)	ND(0.60)	ND(0.67)	ND(6.0)	ND(6.0)	ND(0.021)	ND(10)	0.094
Fluorene	ND(10)	ND(10)	ND(10)	ND(0.50)	ND(0.50)	ND(0.56)	ND(5.0)	ND(5.0)	0.35	ND(10)	ND(0.019)
Pyrene	ND(10)	ND(10)	ND(10)	ND(0.40)	ND(0.40)	ND(0.44)	ND(4.0)	ND(4.0)	ND(0.075)	ND(10)	0.17
Carbazole	ND(10)	NA	NA	NA	NA	NA	NA	NA	ND(10)	NA	ND(10)
Dibenzofuran	ND(10)	NA	ND(10)	NA	NA	NA	NA	NA	ND(10)	ND(10)	ND(10)
2-Methylnaphthalene	ND(10)	NA	ND(10)	NA	NA	NA	NA	NA	ND(10)	ND(10)	ND(10)
Acid-Extractable SVOCs (ug/L)											
Phenol	ND(10)	59	ND(10)	NA	NA	NA	NA	NA		ND(10)	

NA Not Analyzed.
ND Not Detected (Detection Limit).
J Estimated concentration below method detection limit.
d Duplicate sample for QA/QC.
PAH Polyaromatic hydrocarbons.
SVOC Semi-volatile organic compounds.
ug/L Micrograms per liter.

Table 5, Continued
Prior Groundwater Sample Analytical Data:
Semi-Volatile Organic Compounds

Illinois Power Company
Champaign Former MGP Site
Champaign, Illinois

	UMW-110			UMW-113		UMW-114						
	12/16/90	1/25/92	1/6/93	1/23/92	1/8/93	1/23/92	1/8/93	2/14/96	5/7/96	8/7/96	11/5/96	2/3/97
Carcinogenic PAHs (ug/L)												
Benzo(a)anthracene	ND(10)	ND(10)	0.31	ND(10)	ND(0.13)	ND(10)	9.7	ND(10)	0.25	ND(1.3)	2.1	1.6
Benzo(a)pyrene	ND(10)	ND(10)	0.3	ND(10)	ND(0.23)	ND(10)	23	2.7	0.45	1.6	2 J	2.5
Benzo(b)fluoranthene	ND(10)	ND(10)	0.12	ND(10)	ND(0.029	ND(10)	7.1	ND(10)	0.16	1	1 J	0.89 J
Benzo(k)fluoranthene	ND(10)	ND(10)	0.063	ND(10)	ND(0.013)	ND(10)	6.6	ND(10)	0.15	ND(1.7)	0.62 J	ND(1.7)
Chrysene	ND(10)	ND(10)	0.36	ND(10)	ND(0.041)	ND(10)	5.6	ND(10)	0.5	1.5	1.1 J	1.9 J
Dibenzo(a,h)anthracene	ND(10)	ND(10)	ND(0.085)	ND(10)	ND(0.085)	ND(10)	ND(0.85)	ND(10)	ND(0.43)	ND(4.3)	ND(4.8)	ND(4.3)
Indeno(1,2,3-c,d)pyrene	ND(10)	ND(10)	ND(0.028)	ND(10)	ND(0.028)	ND(10)	9	ND(10)	0.17	ND(2.0)	ND(2.2)	ND(2.0)
Total Carcinogenic PAHs	0	0	1.153	0	0	0	61	2.7	1.68	4.1	6.82	6.89
Non-Carcinogenic PAHs (ug/L)												
Acenaphthylene	93	100	ND(0.25)	12	12	58	120	40.2	ND(0.60)	ND(6.0)	ND(6.7)	ND(6.0)
Benzo(g,h,i)perylene	ND(10)	ND(10)	ND(0.14)	ND(10)	ND(0.14)	ND(10)	20	ND(10)	0.51	ND(3.0)	1.5 J	ND(3.0)
Phenanthrene	56	57	ND(0.16)	ND(10)	0.4	53	64	9.7	2.2	ND(5.0)	11	ND(5.0)
Total Non-Carcinogenic PAHs	149	157 0	0	12	12.4	111	204	49.9	2.71	0	12.5	0
Non-Categorized PAHs and Other Base/Neutral SVOCs (ug/L)												
Naphthalene	630	1,900	ND(0.16)	ND(10)	ND(0.16)	6,300	4,200	3,490	1,100	2,200	2,300	1,700
Acenaphthene	52	64	37	6 J	4.3	73	44	35.1	4	13	43	13.2
Anthracene	11		4.7	ND(10)	0.044	13	19	3.3	0.88	1.4	1.5 J	ND(5.0)
Fluoranthene	ND(10)	ND(10)	1.3	ND(10)	ND(0.021)	8	63	5.2	0.11	6.2	10	ND(6.0)
Fluorene	51	49	2.3	ND(10)	0.45	36	7.2	8.8	ND(0.50)	ND(5.0)	28	ND(5.0)
Pyrene	7	ND(10)	2.5	ND(10)	ND(0.075)	9	67	7.3	2.6	3.2	7.7	4.5
Carbazole	ND(10)	NA	ND(10)	NA	ND(10)	NA	ND(10)	NA	NA	NA	NA	NA
Dibenzofuran	11	NA	ND(10)	NA	ND(10)	NA	ND(10)	2.7	NA	NA	NA	NA
2-Methylnaphthalene	34	NA	9 J	NA	ND(10)	NA	150	129	NA	NA	NA	NA
Acid-Extractable SVOCs (ug/L)												
2,4-Dimethylphenol							21	ND(10)	NA	NA	NA	NA
Phenol							16	ND(10)	NA	NA	NA	NA

NA Not Analyzed.
ND Not Detected (Detection Limit).
J Estimated concentration below method detection limit.
d Duplicate sample for QA/QC.
PAH Polyaromatic hydrocarbons.
SVOC Semi-volatile organic compounds.
ug/L Micrograms per liter.

Table 5, Continued
Prior Groundwater Sample Analytical Data:
Semi-Volatile Organic Compounds

Illinois Power Company
Champaign Former MGP Site
Champaign, Illinois

	UMW-15		UMW-401	UMW-402	UMW-403	
	1/7/93	2/14/96	2/15/96	2/16/96	1/6/93	2/16/96
Carcinogenic PAHs (ug/L)						
Benzo(a)anthracene	ND(0.13)	ND(10)	ND(10)	ND(10)	ND(0.13)	ND(10)
Benzo(a)pyrene	ND(0.23)	ND(10)	ND(10)	ND(10)	ND(0.23)	ND(10)
Benzo(b)fluoranthene	ND(0.029	ND(10)	ND(10)	ND(10)	ND(0.029	ND(10)
Benzo(k)fluoranthene	ND(0.013)	ND(10)	ND(10)	ND(10)	ND(0.013)	ND(10)
Chrysene	ND(0.041)	ND(10)	ND(10)	ND(10)	ND(0.041)	ND(10)
Dibenzo(a,h)anthracene	ND(0.085)	ND(10)	ND(10)	ND(10)	ND(0.085)	ND(10)
Indeno(1,2,3-c,d)pyrene	ND(0.028)	ND(10)	ND(10)	ND(10)	ND(0.028)	ND(10)
Total Carcinogenic PAHs	0	0	0	0	0	0
Non-Carcinogenic PAHs (ug/L)						
Acenaphthylene	ND(0.25)	ND(10)	ND(10)	ND(10)	ND(0.25)	ND(10)
Benzo(g,h,i)perylene	ND(0.14)	4.6	ND(10)	ND(10)	ND(0.14)	ND(10)
Phenanthrene	0.54	ND(10)	ND(10)	ND(10)	ND(0.16)	ND(10)
Total Non-Carcinogenic PAHs	0.54	4.6	0	0	0	0
Non-Categorized PAHs and Other Base/Neutral SVOCs (ug/L)						
Naphthalene	ND(0.16)	ND(10)	ND(10)	ND(10)	0.29	ND(10)
Acenaphthene	5.6	ND(10)	ND(10)	ND(10)	ND(0.16)	ND(10)
Anthracene	0.052	ND(10)	ND(10)	ND(10)	ND(0.021)	ND(10)
Fluoranthene	0.34	ND(10)	ND(10)	ND(10)	ND(0.021)	ND(10)
Fluorene	3.5	ND(10)	ND(10)	ND(10)	ND(0.019)	ND(10)
Pyrene	ND(0.075)	ND(10)	ND(10)	ND(10)	ND(0.075)	ND(10)
Carbazole	ND(10)	NA	NA	NA	ND(10)	NA
Dibenzofuran	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
2-Methylnaphthalene	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Acid-Extractable SVOCs (ug/L)						
4-Methylphenol		ND(10)	5.4 J	ND(10)		ND(10)
2,4-Dimethylphenol		ND(10)				
Phenol		ND(10)				

NA Not Analyzed.
ND Not Detected (Detection Limit).
J Estimated concentration below method detection limit.
d Duplicate sample for QA/QC.
PAH Polyaromatic hydrocarbons.
SVOC Semi-volatile organic compounds.
ug/L Micrograms per liter.

Table 6

Prior Analytical Results for Samples from Gas Holder GH-1: 1990-1991

Supplemental Site Investigation
Champaign Former Manufactured Gas Plant
Champaign, Illinois

Field Sample ID		CGH/TW-1-WT-001	CHM-91-001	CGH/TW-1LCT-001	CGH/TW-1-1WCT-001	CGH/TW-1-LCT
Laboratory Sample ID		A202584	A220483	A202585	A202635	A202636
Date Sampled		03/07/90	05/08/91	03/08/90	03/13/90	03/13/90
Sample Depth (feet)		0 - 5	not recorded	7 - 10	10 - 12	10 - 12
Sample Type		composite	grab	composite	composite	composite
Sample Description		Water Layer	Water Layer[1]	Coal Tar/Water	Coal Tar/Water	Coal Tar
Parameter	Units	Value				
pH	S.U.	6.8			7.7	
Solids	%	0.49 G	0.0276 G	3.28	5.35	7
Water	%	98	98	44	82	
Oil	%	1.51		52.72	12.65	
Dissolved Solids	mg/L		220			
Total Volatile Solids (@550 deg C)	mg/L		64			
BTU (Specific Heat)	btu/lb.	<100		8,272	<100	
Specific Gravity (Solids)	g/cc		1.042		1.0106	
Viscosity (Saybolt Universal)	deg F		111.5		122	
Chloride	mg/L	ND(5.0)				
Sulphide		3 mg/L		ND(10) mg/kg	ND(10) mg/kg	
Cyanide (total)		ND(0.01) mg/L		12 mg/kg	6.8 mg/kg	
Cyanide (total available)					ND(0.25) mg/kg	
Sulfur (as Sulphate)	%	<0.02			<0.02	
Nitrogen (Ammonia)	mg/L		0.5			
Total Organic Halogens (TOX)			ND(0.01) mg/L	ND(1,000) mg/kg	0.23 mg/L	
Total Organic Carbon (TOC)	mg/L		31			
Biochemical Oxygen Demand (BOD)	mg/L		11 G			
Chemical Oxygen Demand (COD)	mg/L		59			
Ignitability	deg F	>200		>200	>200	
Phenols	mg/kg	0.35	0.35	11	6.3	
Oil and Grease	mg/L		10			

	Concentration (ug/L)	Concentration (mg/kg)	
Polychlorinated Biphenyls[1]	ND (0.0005)	ND(1.0)	ND(1.0)
Polychlorinated Biphenyls[2]	ND(0.0025)	ND(5.0)	ND(5.0)

mg/kg milligrams per kilogram.
mg/L milligrams per liter.
ND Not detected at detection limit in parentheses.
S.U. Standard Units.
ug/L micrograms per liter.
1 includes the PCBs: Arochlor 1016, 1232, 1242, 1248, 1254, 1260, and 1262.
2 includes the PCB Arochlor 1221.
G grab sample.

Table 6, Continued

Prior Analytical Results for Samples from Gas Holder GH-1: 1990-1991

Supplemental Site Investigation
Champaign Former Manufactured Gas Plant
Champaign, Illinois

Field Sample ID	CGH/TW-1-WT-001	CHM-91-001	CGH/TW-1LCT-001	CGH/TW-1-1WCT-001	CGH/TW-1-LCT
Laboratory Sample ID	A202584	A229483	A202585	A202635	A202638
Date Sampled	03/07/90	05/08/91	03/08/90	03/13/90	03/13/90
Sample Depth (feet)	0 - 5	not recorded;	7 - 10	10 - 12	10 - 12
Sample Type	composite	grab	composite	composite	composite
Sample Description	Water Layer	Water Layer	Coal Tar/Water	Coal Tar/Water	Coal Tar
Volatile Organics (detected)	Concentration (ug/L)			Concentration (mg/kg)	
Acetone	ND(20)		ND(2,000)	ND(12)	
Benzene	ND(5)		21,000	760	
Ethylbenzene	ND(5)		490	250	
Toluene	ND(5)		9,800	1,400	
Xylenes (Total)	ND(5)		1,900	1,300	
Styrene	ND(5)		3,400	950	
Total BTEX	*0*		*33,190*	*3,710*	
Total VOCs	*0*		*36,590*	*4,660*	
Semi-Volatile Organics (detected)		Concentration (ug/L)			
Naphthalene	ND(200)		8,400	9,400	
Acenaphthylene	ND(200)		950 J	1,300	
Acenaphthene	140 J		ND(1,000)	520 J	
Fluorene	ND(200)		540 J	910 J	
Phenanthrene	ND(200)		1400	2,400	
Anthracene	ND(200)		ND(1,000)	640 J	
Fluoranthene	ND(200)		ND(1,000)	710 J	
Pyrene	140 J		640 J	1,100	
Benzo(a)anthracene	ND(200)		ND(1,000)	ND(1,000)	
Chrysene	ND(200)		ND(1,000)	ND(1,000)	
Bis(2-ethylhexyl)phthlate	ND(200)		ND(1,000)	ND(1,000)	
Benzo(b)fluoranthene	ND(200)		ND(1,000)	ND(1,000)	
Benzo(k)fluoranthene	ND(200)		ND(1,000)	ND(1,000)	
Benzo(a)pyrene	ND(200)		ND(1,000)	ND(1,000)	
Indeno(1,2,3-cd)pyrene	ND(200)		ND(1,000)	ND(1,000)	
Dibenzo(a,h)anthracene	ND(200)		ND(1,000)	ND(1,000)	
Benzo(g,h,i)perylene	ND(200)		ND(1,000)	ND(1,000)	
2-Methylnaphthalene	ND(200)		2,000 J	3,000	
Dibenzofuran	ND(200)		ND(1,000)	ND(1,000)	
2,4-Dimethylphenol	ND(200)		5,400	3,400	
2-Methylphenol	ND(200)		6,000	3,200	
4-Methylphenol	ND(200)		14,000	5,800	
Phenol	ND(200)		9,400	2,500	
Total SVOCs	*280*		*48,730*	*34,880*	

BTEX Benzene, toluene, ethylbenzene, and total xylenes.
mg/kg milligrams per kilogram.
ND Not detected at detection limit in parentheses.
ug/L micrograms per liter.
J estimated value near method detection limit
VOCs volatile organic compounds.
SVOC semi-volatile organic compounds.

Table 6, Continued

Prior Analytical Results for Samples from Gas Holder GH-1: 1990-1991

Supplemental Site Investigation
Champaign Former Manufactured Gas Plant
Champaign, Illinois

Field Sample ID	CGH/TW-1-WT-001	CHM-91-001	CGH/TW-1LCT-001	CGH/TW-1-1WCT-001	CGH/TW-1-LCT
Laboratory Sample ID	A202584	A229483	A202585	A202635	A202636
Date Sampled	03/07/90	05/08/91	03/08/90	03/13/90	03/13/90
Sample Depth (feet)	0 - 5	not recorded	7 - 10	10 - 12	10 - 12
Sample Type	composite	grab	composite	composite	composite
Sample Description	Water Layer	Water Layer	Coal Tar/Water	Coal Tar/Water	Coal Tar
Metals	Concentration (mg/L)		Concentration (mg/kg)		
Arsenic	ND(0.005)	ND(0.005)	3.5	4.0	
Barium	0.05	0.04	7.4	8.3	
Cadmium	ND(0.005)	ND(0.005)	1.1	1.1	
Chromium	ND(0.01)	ND(0.01)	1.5	1.5	
Chromium (hexavalent)		ND(0.01)			
Copper		ND(0.02)			
Iron		5.1			
Lead	ND(0.05)	ND(0.05)	70	65	
Manganese		0.27			
Mercury	ND(0.0005)	ND(0.0005)	ND(0.25)	ND(0.25)	
Nickel		ND(0.01)			
Selenium	ND(0.005)	ND(0.005)	ND(0.50)	0.64	
Silver	ND(0.01)	ND(0.01)	ND(0.25)	ND(0.25)	
Zinc		0.06 [3]			

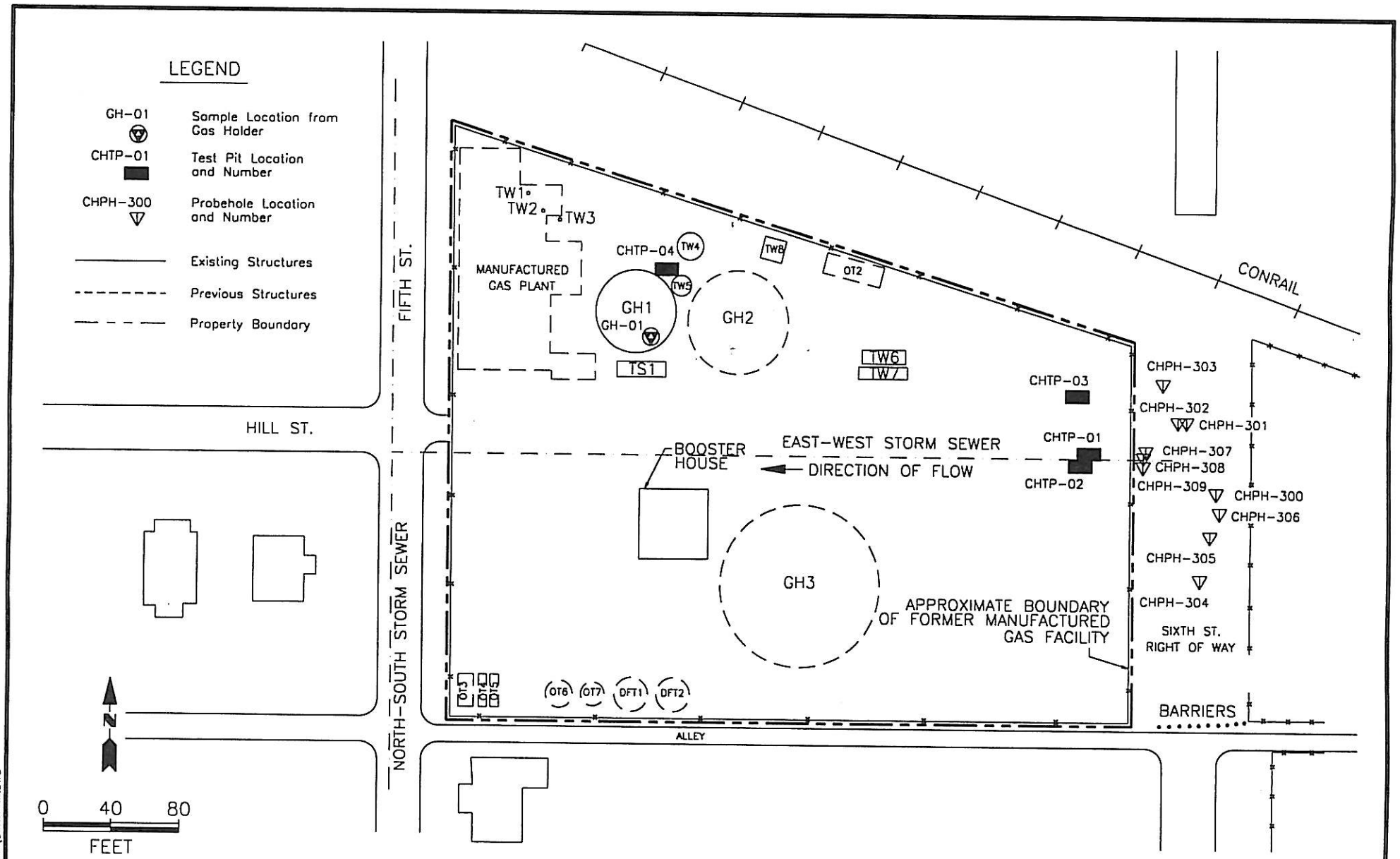
TCLP Volatiles (detected)	Concentration (ug/L)
Benzene	21,000

TCLP Semi-Volatiles (detected)	
Methyl Phenols	12,000

TCLP Metals	Concentration (mg/L)
Arsenic	0.018
Barium	ND(0.5)
Cadmium	0.012
Chromium	ND(0.03)
Lead	ND(0.10)
Mercury	ND(0.0005)
Selenium	ND(0.01)
Silver	ND(0.01)

mg/kg Milligrams per kilogram.
mg/L Milligrams per liter.
ND Not detected at detection limit in parentheses.
TCLP Toxicity Characteristic Leachate Procedure.
ug/L Micrograms per liter.
[3] Prep blank was 0.04 mg/L.

List of Figures



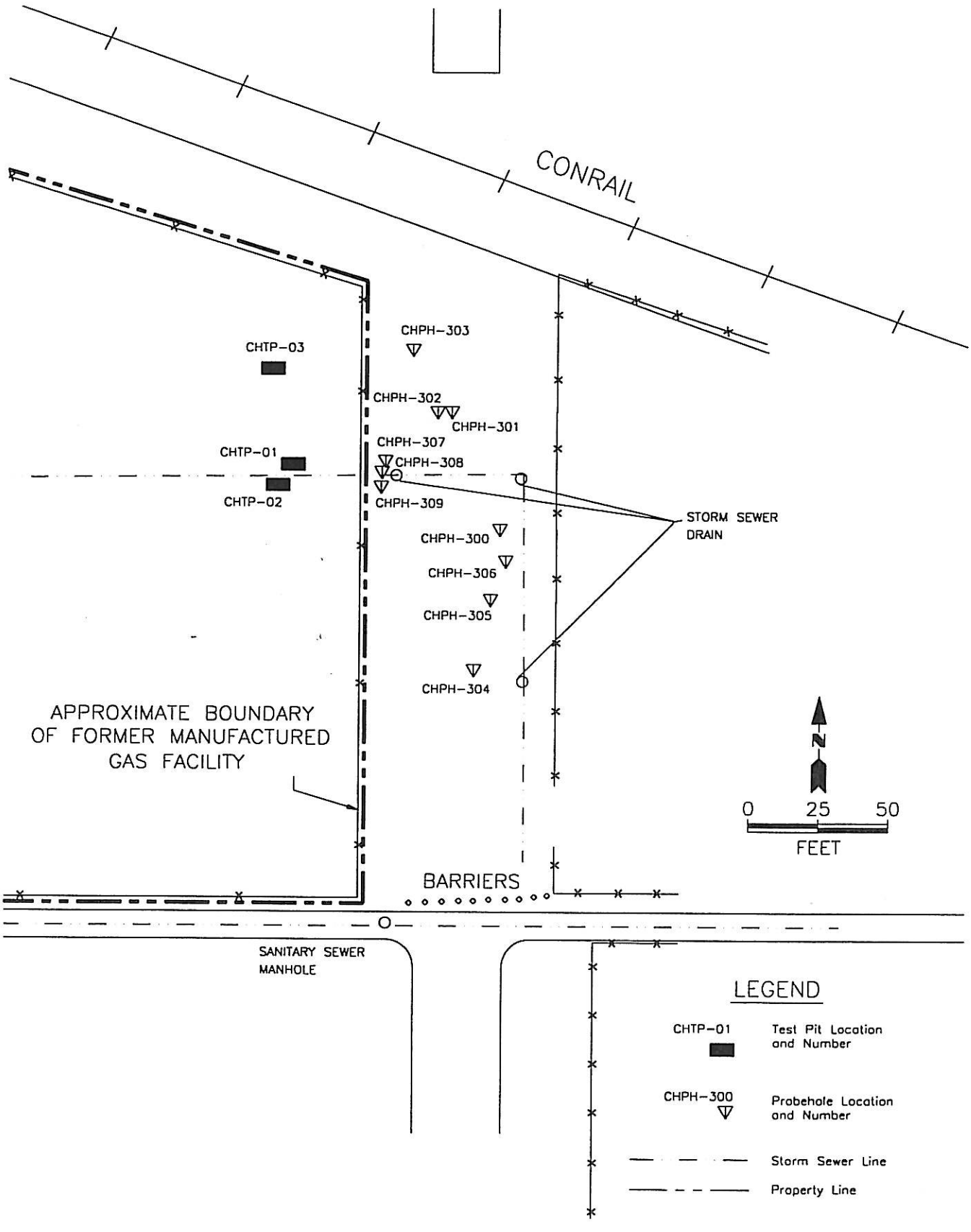
PHILIP ENVIRONMENTAL

TITLE:

Site Map with Sample Locations

DWN:	DES.:	PROJECT NO.: 17246
MRC	SJC	IP - Champaign Champaign, Illinois
CHKD:	APPD:	
DATE: 04/17/97	REV.: A	Figure 1

COL2 G:\CHAMPAIGN\SITEMAPS\SIXTH-IN.DWG



PHILIP ENVIRONMENTAL

TITLE:

Probe hole and Test Pit Locations Along the Sixth Street Right-of-Way

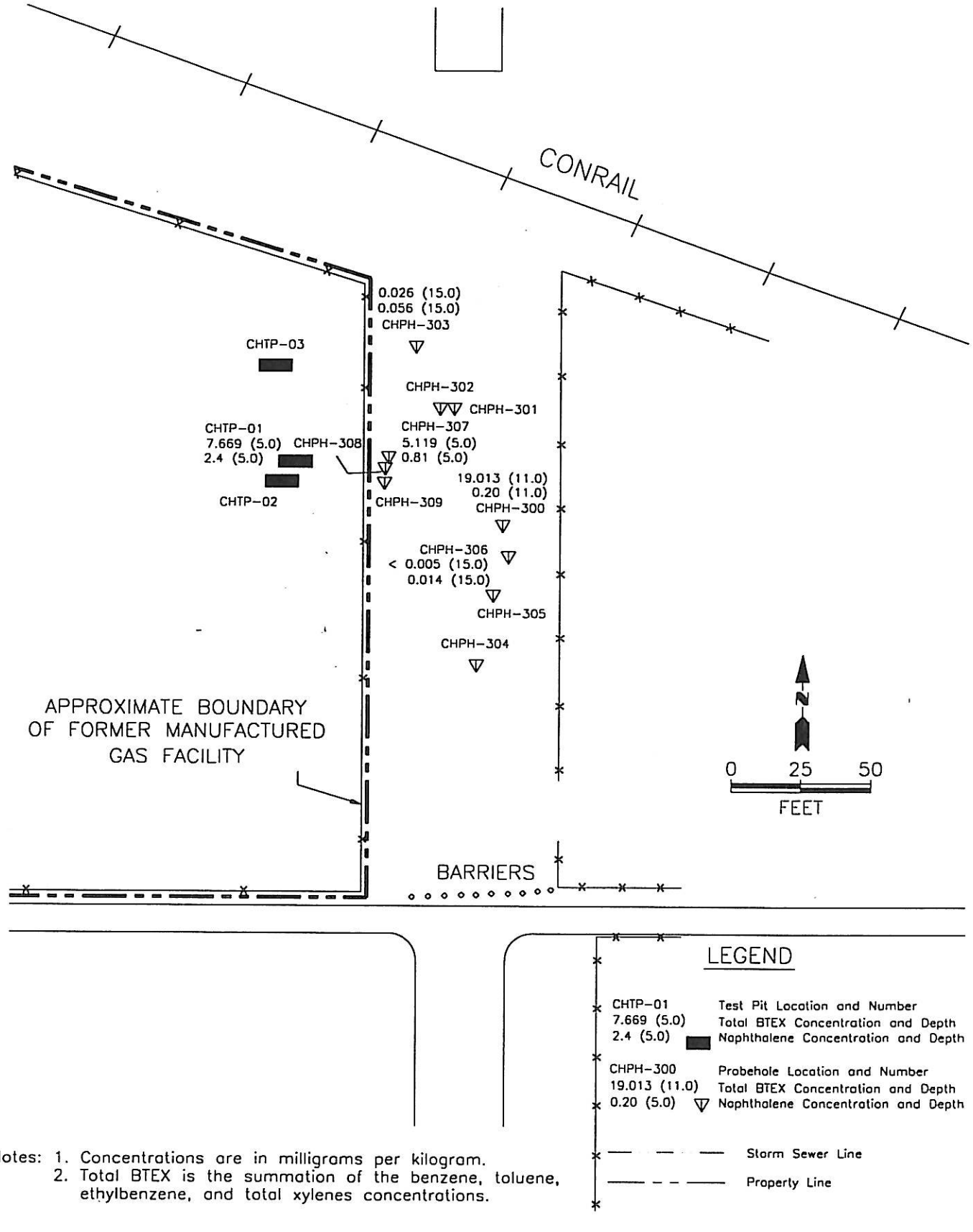
DWN:	DES.:
MRC	SJC
CHKD:	APPD:
DATE: 04/17/97	REV.: A

PROJECT NO.: 17246

IP - Champaign
Champaign, Illinois

Figure 2

COL2 G:\CHAMPAIG\SITEMAPS\SIXTH-ST.DWG



Notes: 1. Concentrations are in milligrams per kilogram.
2. Total BTEX is the summation of the benzene, toluene, ethylbenzene, and total xylenes concentrations.

PHILIP ENVIRONMENTAL

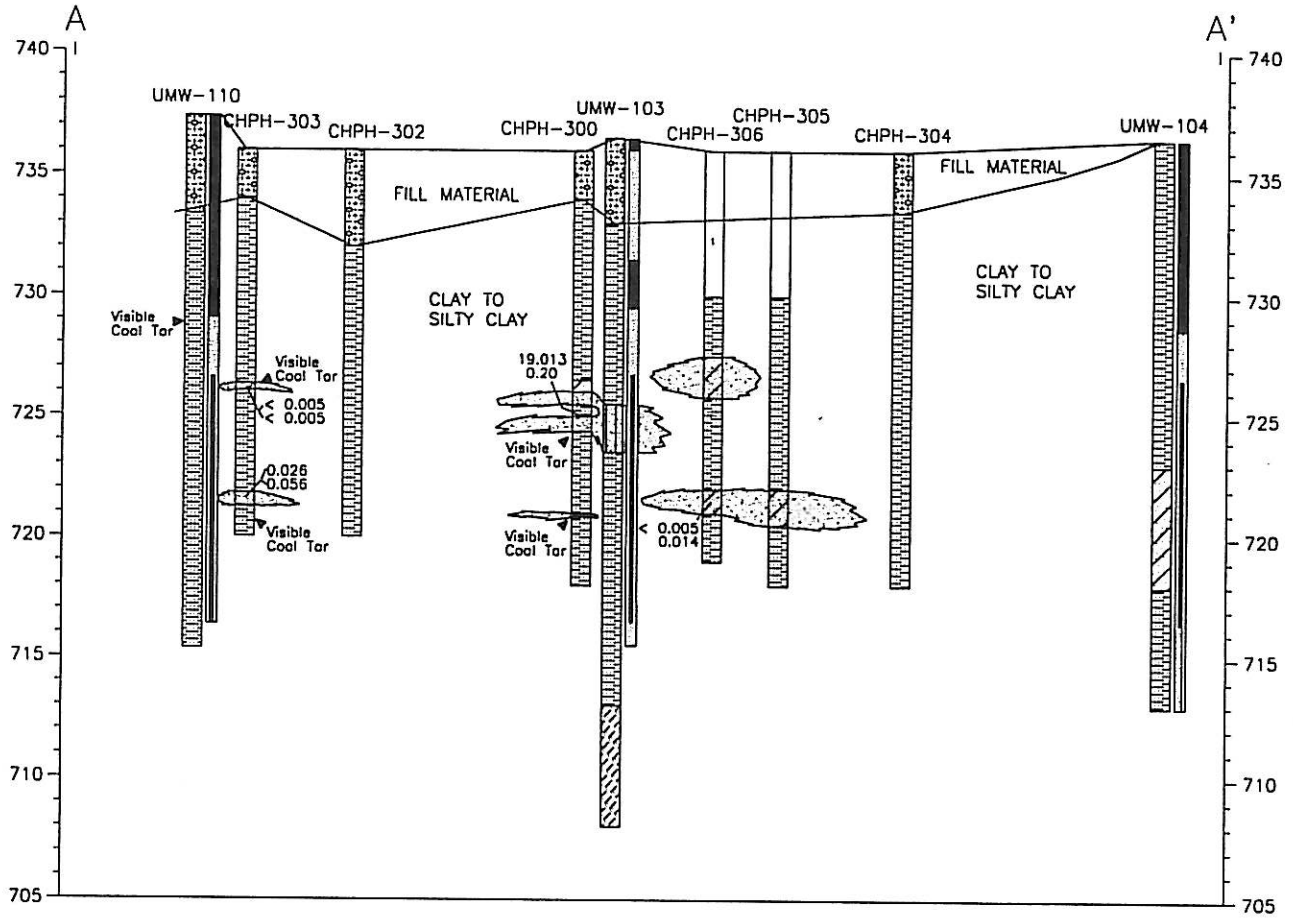
TITLE: Total BTEX and Naphthalene Concentrations in Soil Samples Maximum Detected per Location

DWN:	DES.:
MRC	SJC
CHKD:	APPD:
DATE: 04/17/97	REV.: A

PROJECT NO.: 17246
IP - Champaign
Champaign, Illinois

Figure 3

COL2 G:\CHAMPAIGN\CHEM\MAPS\BTEX-6TH.DWG



0 20 40
FEET

Visible Coal Tar — Visible Coal Tar Identified

< 0.005 / 0.014 — Total BTEX Concentration / Naphthalene Concentration

Sand Lenses and Layers

Notes:
1. Concentrations are in milligrams per kilogram.
2. Total BTEX is the summation of the benzene, toluene, ethylbenzene, and total xylenes concentrations.
3. Elevations of probeholes were not surveyed and are estimated at 736 based on surrounding terrain conditions.

PHILIP ENVIRONMENTAL

TITLE:

Cross Section A–A' with Total BTEX and Naphthalene Concentrations in Soil Samples and Visible Coal Tar

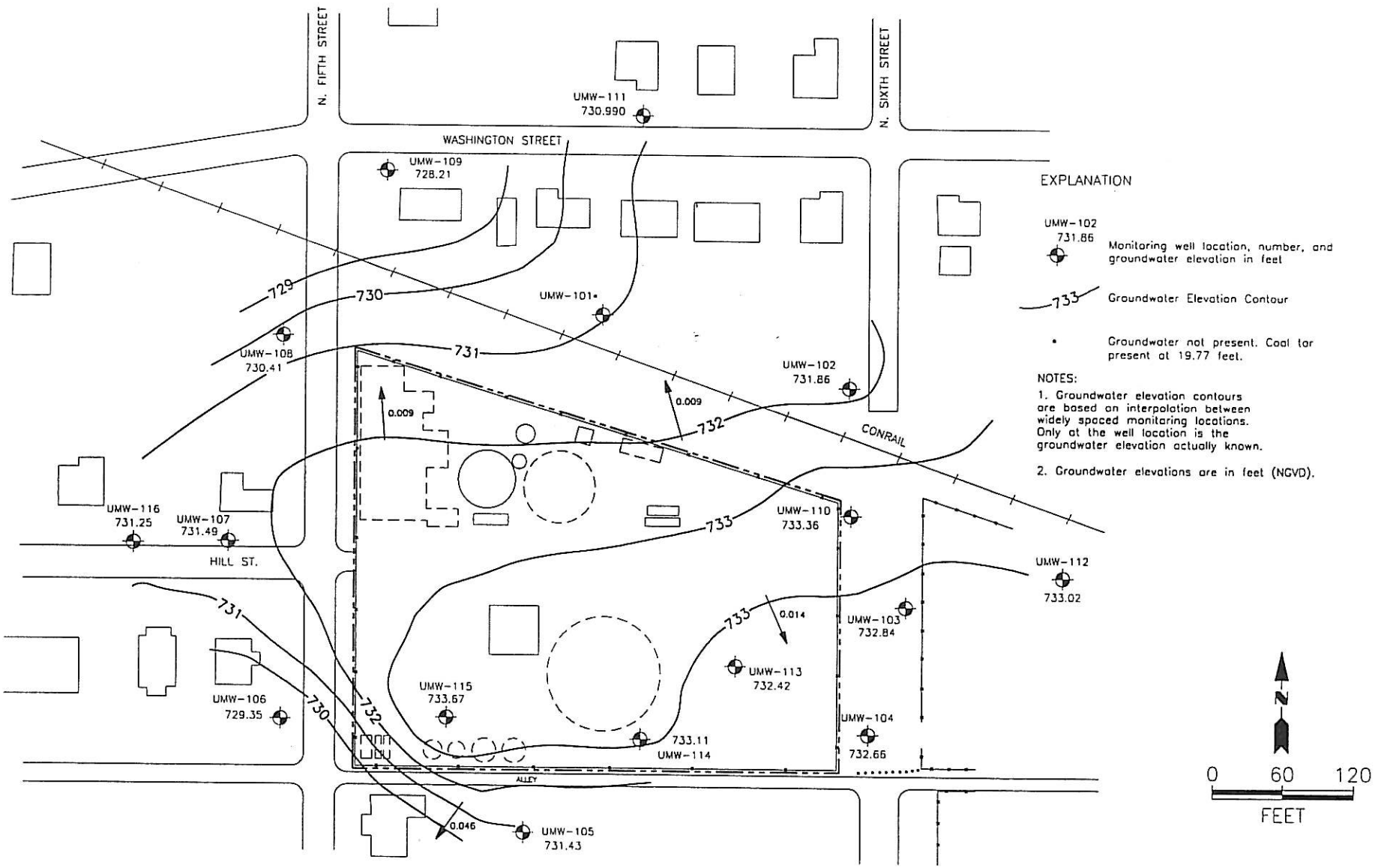
DWN:	DES.:
MRC	SJC
CHKD:	APPD:
DATE:	REV.:
04/22/97	A

PROJECT NO.: 17246

IP – Champaign
Champaign, Illinois

Figure 4

COL2 G:\CHAMPAIG\GEO\MAPS\BORDER.DWG



PHILIP ENVIRONMENTAL

TITLE:

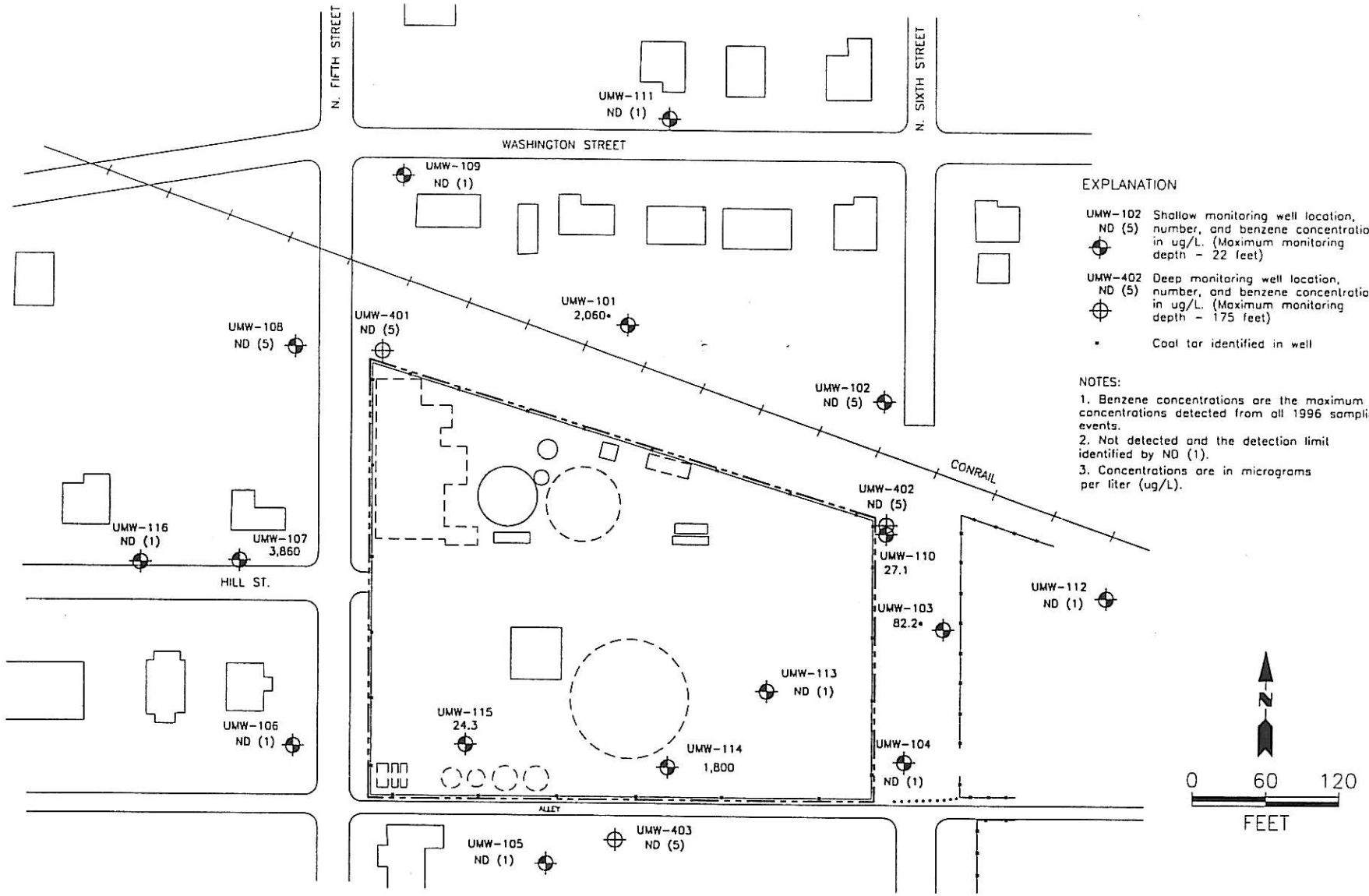
Shallow Groundwater Elevations
February 1996

DWN:	DES.:
MRC	KELRON
CHKD:	APPD:
DATE:	REV.:
01/08/97	A

PROJECT NO.:
IP - Champaign
Champaign, Illinois

Figure 5

COL2 G:\CHAMPAIGN\HYDRO\MAPS\GW-0296.DWG



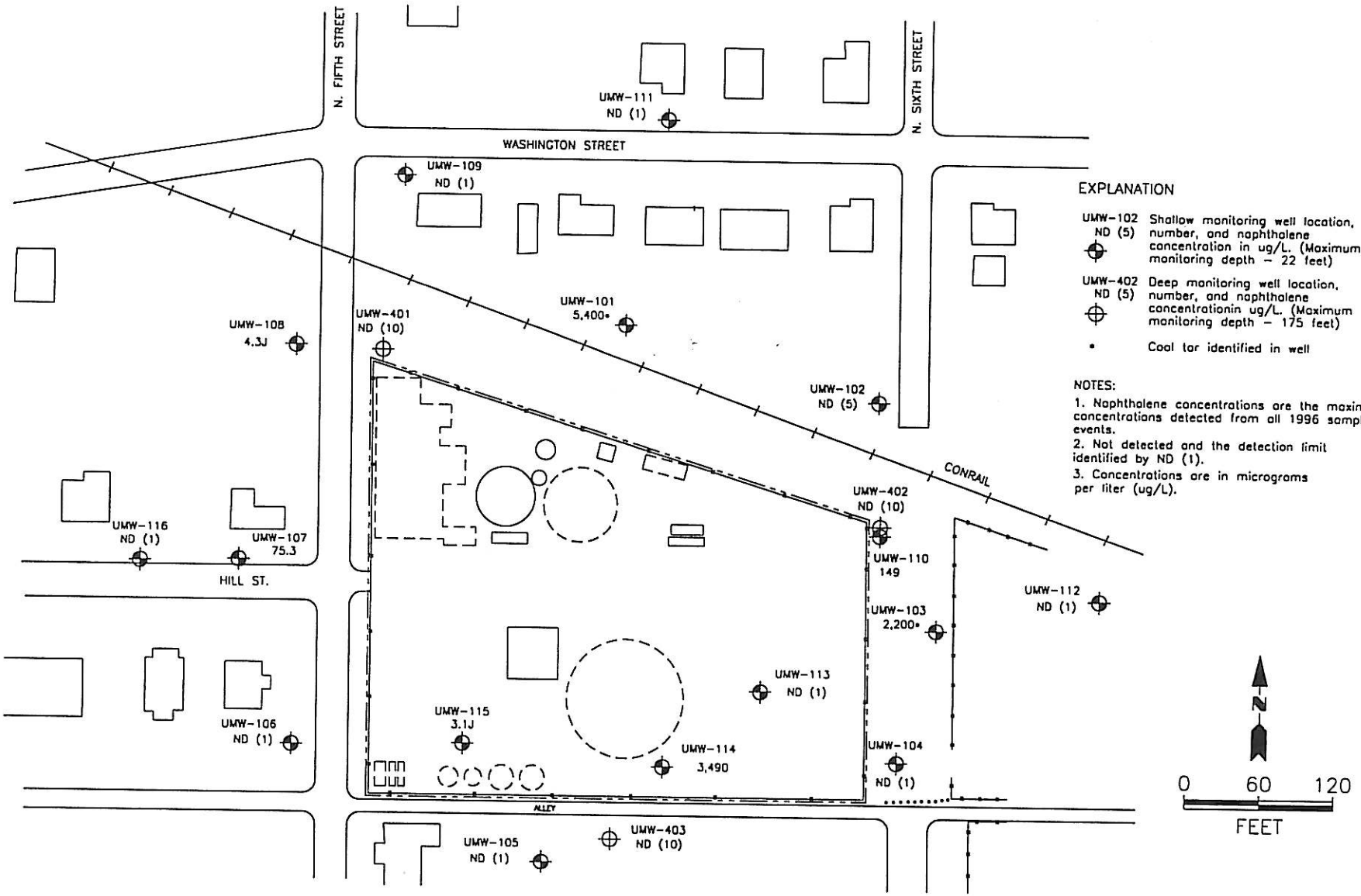
PHILIP ENVIRONMENTAL

TITLE:

Maximum Benzene Concentrations in Groundwater Samples 1996 Monitoring Events

DWN:	DES.:	PROJECT NO.:
MRC	KELRON	IP - Champaign Champaign, Illinois
CHKD:	APPD:	
DATE: 01/08/97	REV.: A	Figure 6

COL2 G:\CHAMPAIG\CHEM\MAPS\BENZ-96.DWG



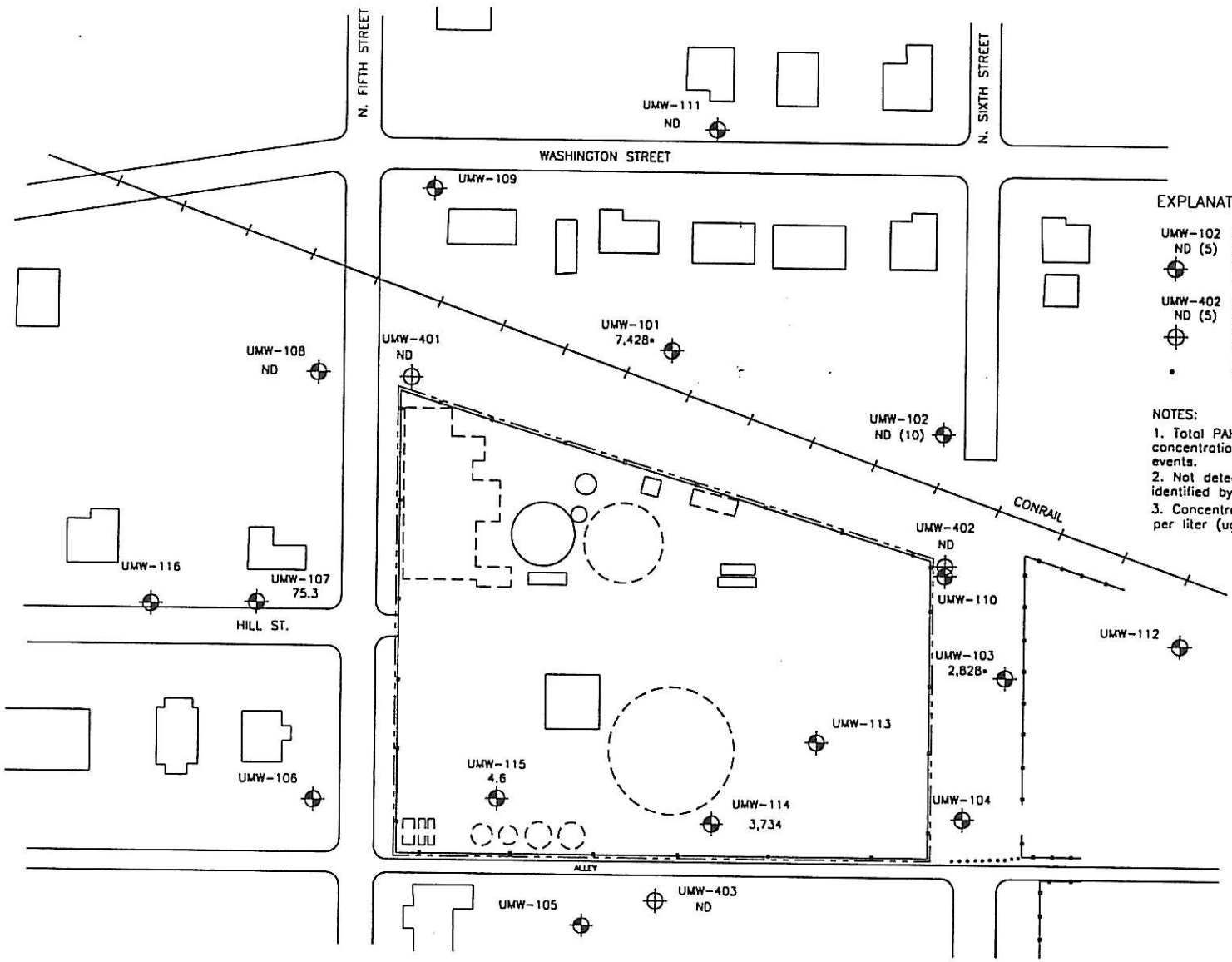
PHILIP ENVIRONMENTAL

TITLE:

Maximum Naphthalene Concentrations in Groundwater Samples 1996 Monitoring Events

DWN:	DES.:	PROJECT NO.:
MRC	KELRON	IP – Champaign Champaign, Illinois
CHKD:	APPD:	
DATE: 01/08/97	REV.: A	Figure 7

COL2 G:\CHAMPAIG\CHEM\MAPS\NAPH-96.DWG



PHILIP ENVIRONMENTAL

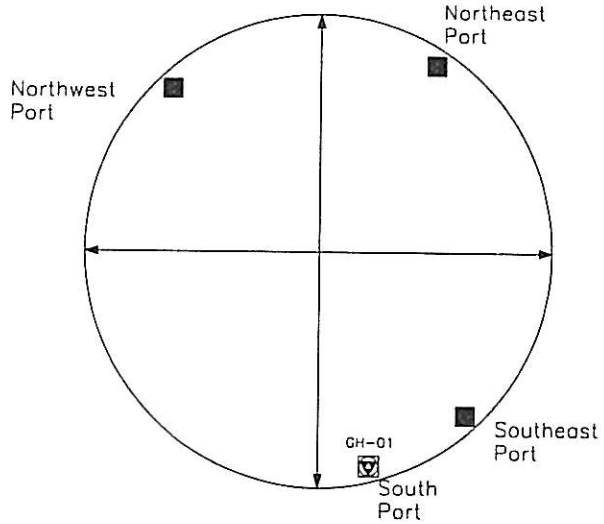
TITLE:

Maximum Total PAH Concentrations in Groundwater Samples 1996 Monitoring Events

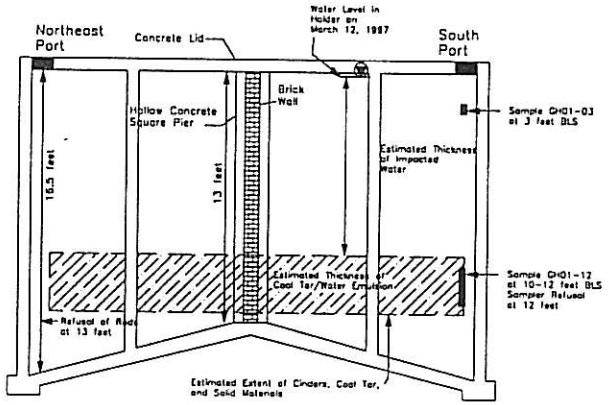
DWN:	DES.:	PROJECT NO.:
MRC	KELRON	IP – Champaign Champaign, Illinois
CHKD:	APPD:	
DATE: 01/08/97	REV.: A	Figure 8

COL2 G:\CHAMPAIG\CHEM\MAPS\PAH-96.DWG

Plan View



Generalized Cross-Sectional View



Horizontal Scale

0 10 20

FEET

Vertical Scale

0 5 10

FEET

Notes:
1. The detailed inner structure of the gas-holder, converted to a tar well/separator prior to 1924 is not shown.
2. All measurements are approximate based on historic plant drawings and field measurements.
3. Thicknesses of impacted water, coal-tar/water emulsion, and other materials in gas holder GH-1 are estimates based on limited field data.

PHILIP ENVIRONMENTAL

TITLE:

Generalized Cross-Sectional View of Gas Holder GH-1

DWN:	DES.:	PROJECT NO.: 17246
MRC	SJC	IP - Champaign Champaign, Illinois
CHKD:	APPD:	
DATE: 06/02/97	REV.: A	Figure 9

COL2 G:\CHAMPAIG\GEOL\XSECT\GH1-SECT.DWG

APPENDIX A

Records of Subsurface Exploration

Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-300**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 3030.42	Y Coordinate: 4901.79
Date(s) Drilled: 03/10/97 - 03/10/97	Total Depth: 18.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
		CS-1 0-4				FI	Brown FILL with silty clay, sand, gravel, concrete, organics, moist		
						CL	Brown silty CLAY brown-gray with black mottling light gray with brown mottling, moist		
	5	CS-2 4-6							
		CS-3 6-8							
		CS-4 8-10					light gray with gray-green mottling		
	10	CS-5 10-12				SC SP CL SP	Brown fine to medium SAND and clayey SAND, trace gravel Gray medium to coarse SAND, wet-saturated, coal tar odor Sandy CLAY Medium to coarse SAND, coal tar odor		LAB
		CS-6 12-14				CL	2-inch SAND layer with gravel and coal tar ganglia @ 11.1 to 11.3 Light brown Silty CLAY with sand, trace gravel, no coal tar odors coal tar in factures		
		CS-7 14-16					coal tar odors (no visible coal tar)		
	15					SP CL	Brown fine to medium SAND, 1/4-inch coal-tar saturated lens Light brown silty CLAY		
		CS-8 16-18					Light gray-green CLAY, stiff		
							Probehole Terminated - 18 feet		
	20								

Remarks: LAB - Indicates sample collected for laboratory analysis.

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-301**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 3012.92	Y Coordinate: 4944.38
Date(s) Drilled: 03/10/97 - 03/10/97	Total Depth: 14.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
							Not sample collected to 6 feet		
	5	CS-1 6-8				CL	Light gray CLAY with brown mottling		
		CS-2 8-10					coal tar odor		
	10	CS-3 10-12					Medium gray silty CLAY, trace gravel, coal tar odor		
							two fine sand lenses present @ 11 feet (thickness less than 1/10-inch)		
		CS-4 12-14					gray-green with sand and gravel, very stiff		
	15						Probehole Terminated - 14 feet		
	20								

Remarks:

Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-302**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 3007.81	Y Coordinate: 4944.35
Date(s) Drilled: 03/10/97 - 03/10/97	Total Depth: 16.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
		CS-1 0-4				FI	Black FILL, silty clay, coal, high organics		
							faint coal tar odor		
		CS-2 4-8				CL	Light to medium gray CLAY, faint coal tar odor		
	5								
		CS-3 8-12					with brown mottling, no coal tar odor		
	10						medium gray with faint coal tar odor CLAY with sand and gravel		
		CS-4 12-16					Silty CLAY with sand and gravel, coal tar odor		
	15						Probehole Terminated - 16 feet		
	20								

Remarks:

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-303**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 2998.89	Y Coordinate: 4966.81
Date(s) Drilled: 03/11/97 - 03/11/97	Total Depth: 16.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
		CS-1 0-4				FI	Brown to black FILL with silty clay, rock, coal, cinders, concrete		
						CL	Medium gray silty CLAY		
							CLAY with silt, stiff		
		CS-4 4-8					light gray with minor brown mottling, plastic		
	5								
		CS-5 8-12							
	10					SC	Clayey SAND and GRAVEL with coal tar blebs		LAB
						CL	Gray-green silty CLAY with sand and gravel, faint coal tar odor		
		CS-6 12-16					no coal tar odor		
						SP	Fine to medium SAND, wet-saturated		
	15					CL	Medium to coarse SAND and GRAVEL with coal tar ganglia		LAB
							Light gray CLAY with brown mottling, no coal tar odor		
							Probehole Terminated - 16 feet		
	20								

Remarks: LAB - Indicates sample collected for laboratory analysis.

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-304**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 3021.27	Y Coordinate: 4850.62
Date(s) Drilled: 03/11/97 - 03/11/97	Total Depth: 18.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
		CS-1 0-4				FI	Brown to black FILL silty clay, brick, coal, high organics, moist		
						CL	Brown silty CLAY, trace sand		
	5								
		CS-2 6-10					light gray grading to gray-green with brown mottling		
	10	CS-3 10-14					with sand and gravel, dry, stiff		
		CS-4 14-18					medium gray		
	15						Probehole Terminated - 18 feet		
	20								

Remarks: Remarks:

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-305**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 3027.14	Y Coordinate: 4876.24
Date(s) Drilled: 03/11/97 - 03/11/97	Total Depth: 18.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
							No sample collected to 6 feet		
	5								
		CS-1 6-10				CL	Light gray CLAY with brown mottling, moist		
							Sandy CLAY, faint coal tar odor		
							Gray-green silty CLAY with gravel, no coal tar odor		
	10	CS-2 10-14					stiff		
		CS-3 14-18				SC	Clayey fine SAND, trace gravel, wet-saturated		
	15					CL	Silty CLAY, trace sand and gravel, stiff		
							medium gray		
							Probehole Terminated - 18 feet		
	20								

Remarks:

Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-306**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 3032.56	Y Coordinate: 4890.23
Date(s) Drilled: 03/11/97 - 03/11/97	Total Depth: 17.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
							No sample collected to 6 feet		
	5	CS-1 6-10				CL	Light gray CLAY with brown mottling, moist		
						SC	Gray-green clayey fine to medium SAND, trace gravel, wet-saturated, faint coal tar odor		
	10	CS-2 10-14					Medium SAND with clay, trace gravel		
						CL	Gray-green silty CLAY, trace sand and gravel, stiff, no coal tar odor		
		CS-3 14-17				SC	Medium to coarse SAND with clay, trace gravel, wet-saturated, no coal tar odor		
	15					CL	Silty CLAY, trace sand and gravel, moist, stiff		LAB
							Probehole Terminated - 17 feet		
	20								

Remarks: LAB - Indicates sample collected for laboratory analysis.

Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-307**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 2989.08	Y Coordinate: 4926.58
Date(s) Drilled: 03/11/97 - 03/11/97	Total Depth: 6.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
							No sample collected to 4 feet		
	5	CS-1 4-6				CL	Light gray CLAY with brown mottling, moist, coal tar odor saturated with coal tar on half of sample closer to sewer coal tar odor		LAB
							Probehole Terminated - 6 feet		
	10								
	15								
	20								

Remarks: LAB - Indicates sample collected for laboratory analysis.

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: CHPH-308

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 2987.80	Y Coordinate: 4922.56
Date(s) Drilled: 03/11/97 - 03/11/97	Total Depth: 6.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
							No sample collected to 4 feet		
	5	CS-1 4-6				FI	FILL, tan sand mixed with clay, sewer line backfill, no coal tar odor		
						CL	Light gray CLAY with brown mottling, viscous coal tar present in fractures		
							Probehole Terminated - 6 feet		
	10								
	15								
	20								

Remarks:

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHPH-309**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 2987.57	Y Coordinate: 4917.17
Date(s) Drilled: 03/11/97 - 03/11/97	Total Depth: 8.00'	Borehole Dia.: 1.00in
Consultant: Philip Environmental	Location: Along Sixth Avenue Right of Way	
Drilled By: Philip Environmental	Drilling Method: RECON System	
Logged By: S. Crovens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
							No sample collected to 4 feet		
	5	CS-1 4-8				FI	FILL, sandy clay overlying 2-inches of solid brick VOID spoce - sampler dropped 6 inches		
						CL	Light gray CLAY with brown mottling, viscous coal tar in fractures estimated 4% of sample volume no visible coal tar, coal tar odor no coal tar odor		
	10						Probehole Terminated - 8 feet		
	15								
	20								

Remarks:

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Test Pit No.: **CHTP-01**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 2955.65	Y Coordinate: 4924.64
Date(s) Drilled: 03/12/97 - 03/12/97	Total Depth: 7.00'	Borehole Dia.:
Consultant: Philip Environmental	Location: West of Sixth Avenue Right of Way	
Excavated By: Super-K Backhoe	Method: Backhoe - Test Pit	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. / Depth Interval / Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
					FI	FILL, silty clay with brick		
					FI/CL	Brown silty CLAY, perched groundwater seepage @ FILL-CLAY interface		
	5				FI	Clay-tile storm sewer, 8-inch pipe intercepted; approx. 100 gallons of water with minor coal tar impact drained from pipe		
					CL	Light gray CLAY with extensive fractures, root fragments, and macropores, heavily impacted with viscous coal tar adjacent to and below sewer line		LAB
						End of Test Pit - 7 feet		
	10							
	15							
	20							

Remarks: LAB - Indicates sample collected for laboratory analysis.

G:\GEC CHTP-

Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Test Pit No.: CHTP-02

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 2950.82	Y Coordinate: 4917.39
Date(s) Drilled: 03/12/97 - 03/12/97	Total Depth: 7.00'	Borehole Dia.:
Consultant: Philip Environmental	Location: West of Sixth Avenue Right of Way	
Excavated By: Super-K Backhoe	Method: Backhoe - Test Pit	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
						FI	FILL, silty clay with brick		
							Cast iron 8-inch pipe; east-west orientation; parallel and 4 feet south of sewer; invert at 56 inches; no apparent impact; filled with clear water		
							Two metal 1.5-inch pipes; east-west orientation; parallel and 6 feet south of sewer inverts at 32 and 50 inches; lower pipe clad in concrete		
						CL	Brown silty CLAY		
	5						Light gray CLAY with extensive fractures, root fragments, and macropores, heavily impacted with viscous coal tar		
							End of Test Pit - 7 feet		
	10								
	15								
	20								

Remarks:

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Test Pit No.: CHTP-03

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 2948.28	Y Coordinate: 4959.50
Date(s) Drilled: 03/12/97 - 03/12/97	Total Depth: 7.00'	Borehole Dia.:
Consultant: Philip Environmental	Location: West of Sixth Avenue Right of Way	
Excavated By: Super-K Backhoe	Method: Backhoe - Test Pit	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
						FI	FILL, silty clay, brick, concrete, coal tar odor		
						CL	Brown silty CLAY, perched groundwater seepage at FILL-CLAY interface		
	5						Light gray CLAY with extensive fractures, root fragments, and macropores, heavily impacted with viscous coal tar		
							End of Test Pit - 7 feet		
	10								
	15								
	20								

Remarks:

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Record of Subsurface Exploration

PHILIP ENVIRONMENTAL

Probehole No.: **CHTP-04**

Project Name: IP - Champaign	Ground Elev.: Not Surveyed	Datum: Not Surveyed
Project Number: 17246	X Coordinate: 2707.32	Y Coordinate: 5041.43
Date(s) Drilled: 03/12/97 - 03/12/97	Total Depth: 3.00'	Borehole Dia.:
Consultant: Philip Environmental	Location: Northeast of Gas Holder GH-1	
Excavated By: Super-K Backhoe	Method: Backhoe - Test Pit	
Logged By: S. Cravens		

Elevation (ft)	Depth (ft)	Sample No. Depth Interval	Recovery	Water Level	Graphic Log	USCS Code	Material Description	PID Reading	Lab Sample
	0					FI	FILL, silty cloy, concrete, brick, high organics, moist, impacted with coal tar		
							End of Test Pit - 3 feet		LAB
	5								
	10								
	15								
	20								

Remarks: LAB - Indicates sample collected for laboratory analysis.

G:\...\CHTP-

APPENDIX B
Chain-of-Custody Forms and Laboratory Analytical Results

ZENON LABORATORIES

5555 North Service Road
Burlington, Ontario, Canada L7L 5H7
Tel: (905) 332-8788
Fax: (905) 332-9169

Certificate of Analysis

CLIENT INFORMATION

Attention:	Steve Bronskill
Client Name:	Philip Environmental Services
Project:	17246
Project Desc:	CH-MGPCT Invest.
Address:	210 West Sand Bank Road, P.O. Box 230 Columbia, IL 62236-0230
Fax Number:	618-281-5120
Phone Number:	618-281-7173

LABORATORY INFORMATION

Contact:	Ada Blythe, B.Sc., C.Chem.
Project:	AN970220
Date Received:	97/03/19
Date Reported:	97/03/25
Submission No.:	7C0415
Sample No.:	009256

NOTES: *'-' = not analysed '<' = less than Method Detection Limit (MDL) 'NA' = no data available*
LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by Zenon are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Seventeenth Edition. Other methods are based on the principles of MISA or EPA methodologies.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at Zenon for a period of three weeks from receipt of data or as per contract.

COMMENTS:

Certified by: _____

	Client ID:	GH1-12
	Zenon ID:	009256 97
	Date Sampled:	97/03/12

Component	**MDL**	**Units**	
pH after 3.5 ml of 1N HCl addition			2.00
pH after extraction (semi-vols/metals)			4.90
pH after extraction (volatiles)			4.90
pH initial (5g + 96.5ml water)			6.27
pH of extraction fluid (semi-vols/metals)			4.98
pH of extraction fluid (volatiles)			4.98

ZEL Summary of Analysis Pre. Dates

Batch Code:	**0320SPA1**
pH Readings	009256 97
Date analysed	97/03/21
Date prepared	97/03/20

ZENON LABORATORIES

5555 North Service Road
Burlington, Ontario, Canada L7L 5H7
Tel: (905) 332-8788
Fax: (905) 332-9169

Certificate of Analysis

CLIENT INFORMATION

Attention:	Steve Bronskill
Client Name:	Philip Environmental Services
Project:	17246
Project Desc:	CH-MGPCT Invest.
Address:	210 West Sand Bank Road, P.O. Box 230 Columbia, IL 62236-0230
Fax Number:	618-281-5120
Phone Number:	618-281-7173

LABORATORY INFORMATION

Contact:	Ada Blythe, B.Sc., C.Chem.
Project:	AN970220
Date Received:	97/03/19
Date Reported:	97/03/25
Submission No.:	7C0415
Sample No.:	009255-009257

NOTES: *'-' = not analysed '<' = less than Method Detection Limit (MDL) 'NA' = no data available*
LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by Zenon are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Seventeenth Edition. Other methods are based on the principles of MISA or EPA methodologies.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at Zenon for a period of three weeks from receipt of data or as per contract.

COMMENTS:

NS" = Not spiked

Certified by:

ZEL Summary of Analysis Pre. Dates

Batch Code:	**0321SM01**
Volatiles	009255 97
	009257 97
Date analysed	97/03/21
Date prepared	97/03/21
Batch Code:	**0321VC01**
Semi-Volatiles	009255 97
	009257 97
Date analysed	97/03/24
Date prepared	97/03/21

ZENON LABORATORIES

5555 North Service Road
Burlington, Ontario, Canada L7L 5H7
Tel: (905) 332-8788
Fax: (905) 332-9169

Certificate of Analysis

CLIENT INFORMATION

Attention:	Steve Bronskill
Client Name:	Philip Environmental Services
Project:	17246
Project Desc:	CH-MGPCT Invest.
Address:	210 West Sand Bank Road, P.O. Box 230 Columbia, IL 62236-0230
Fax Number:	618-281-5120
Phone Number:	618-281-7173

LABORATORY INFORMATION

Contact:	Ada Blythe, B.Sc., C.Chem.
Project:	AN970220
Date Received:	97/03/13
Date Reported:	97/04/08
Submission No.:	7C0415
Sample No.:	009257

NOTES: *'-' = not analysed '<' = less than Method Detection Limit (MDL) 'NA' = no data available*
LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by Zenon are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Seventeenth Edition. Other methods are based on the principles of MISA or EPA methodologies.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at Zenon for a period of three weeks from receipt of data or as per contract.

COMMENTS:
TCLP Metals report. (selected metals)

Certified by: A. Blythe

			Method	Blank	% Recovery	GH1-12
	Client ID:		Blank	Spike		TCLP Leach
	Zenon ID:					009257 97
	Date Sampled:					
Component	**MDL**	**Units**				
TCLP Metals via SW846 Method 6010						
Cadmium	0.002	mg/L	0.004	0.58	104	<
Chromium	0.004	"	<	1.2	108	<
Lead	0.020	"	<0.022	1.2	109	<0.022

ZEL Summary of Analysis Pre. Dates

Batch Code:	**0407MSA1**
Metals	009257 97
Date analysed	97/04/07
Date prepared	97/04/07

ZENON LABORATORIES

5555 North Service Road
Burlington, Ontario, Canada L7L 5H7
Tel: (905) 332-8788
Fax: (905) 332-9169

Certificate of Analysis

CLIENT INFORMATION

Attention:	Steve Bronskill
Client Name:	Philip Environmental Services
Project:	17246
Project Desc:	CH-MGPCT Invest.
Address:	210 West Sand Bank Road, P.O. Box 230 Columbia, IL 62236-0230
Fax Number:	618-281-5120
Phone Number:	618-281-7173

LABORATORY INFORMATION

Contact:	Ada Blythe, B.Sc., C.Chem.
Project:	AN970220
Date Received:	97/03/13
Date Reported:	97/03/26
Submission No.:	7C0331
Sample No.:	008848-008849

NOTES: *'-' = not analysed '<' = less than Method Detection Limit (MDL) 'NA' = no data available*
LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by Zenon are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Seventeenth Edition. Other methods are based on the principles of MISA or EPA methodologies.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at Zenon for a period of three weeks from receipt of data or as per contract.

COMMENTS:

(1) Samples did not ignite

"DIL" Surrogates were diluted out

COD analysis was not performed as the sample is 99% volatile organics.

Certified by:

Zenon Environmental Laboratories - Certificate of Analysis

	Client ID:		Method Blank	Blank Spike #1	Blank Spike #1
	Zenon ID:		008848 97	008848 97	008848 97
	Date Sampled:		97/03/12	97/03/12	97/03/12
Component	**MDL**	**Units**			% recoveries
pH *via SW846 Method 9045*			-	-	-
Ash (550 °C) *via SM*	0.10	(%)	<	-	-
BTU *via ASTM D-240*	500	btu/lb	-	-	-
Moisture	0.01	(%)	0.03	-	-
Specific Gravity	0.001	g/cc	1.0	-	-
COD *via SM 5220*	1000	mg/kg	-	-	-
Sulphide *via SW846 Method 9030*	10.0	mg/kg	<	38	95
Cyanide*via SW846 Method 9010*	0.100	mg/kg	<	1.3	100
Sulphate *via EPA Method 300.0*	0.010	(%)	<	0.099	99
Metals via 7000 Series					
Arsenic (gfaa)	0.5	mg/kg	<	9.0	90
Lead (gfaa)	0.5	"	<	4.2	96
Mercury	0.04	"	<	1.0	100
Selenium (gfaa)	0.5	"	<	8.7	84
Metals via Sw846 Method 6010					
Silver	0.5	mg/kg	<1.0	99	99
Barium	0.1	"	<0.2	200	98
Cadmium	0.2	"	<0.4	96	96
Copper	5	"	<10	200	97
Iron	5	"	<10	2400	100
Manganese	5	"	<10	200	98
Nickel	5	"	<10	100	100
Lead	10	"	<20	200	100
Sulphur	10	"	<20	210	100
Zinc	5	"	<10	390	98
OX *via SW846 Method 9020*	5	mg/kg	<	21	105
Ignitability *via SW846 Method 1010*	1	mm/min	-	-	-

	Client ID:		Blank Spike #2	Blank Spike #2	GH1-12
	Zenon ID:		008848 97	008848 97	008849 97
	Date Sampled:		97/03/12	97/03/12	97/03/12
Component	**MDL**	**Units**		% recoveries	
pH *via SW846 Method 9045*			-	-	6.41
Ash (550 °C) *via SM*	0.10	(%)	-	-	1.1
BTU *via ASTM D-240*	500	btu/lb	-	-	3600
Moisture	0.01	(%)	-	-	22
Specific Gravity	0.001	g/cc	-	-	0.99
COD *via SM 5220*	1000	mg/kg	-	-	NA
Sulphide *via SW846 Method 9030*	10.0	mg/kg	-	-	100
Cyanide*via SW846 Method 9010*	0.100	mg/kg	-	-	2.3
Sulphate *via EPA Method 300.0*	0.010	(%)	1.0	100	0.29
Metals via 7000 Series					
Arsenic (gfaa)	0.5	mg/kg	-	-	3.2
Lead (gfaa)	0.5	"	-	-	93
Mercury	0.04	"	-	-	<
Selenium (gfaa)	0.5	"	-	-	0.8
Metals via Sw846 Method 6010					
Silver	0.5	mg/kg	-	-	<1.0
Barium	0.1	"	-	-	3.8
Cadmium	0.2	"	-	-	1.4
Copper	5	"	-	-	<10
Iron	5	"	-	-	960
Manganese	5	"	-	-	<10
Nickel	5	"	-	-	<10
Lead	10	"	-	-	91
Sulphur	10	"	-	-	1900
Zinc	5	"	-	-	160
OX *via SW846 Method 9020*	5	mg/kg	-	-	<
Ignitability *via SW846 Method 1010*	1	mm/min	-	-	(1)

Component	*Client ID:* / *Zenon ID:* / *Date Sampled:* MDL	Units	GH1-12 008849 97 97/03/12 Duplicate	GH1-12 008849 97 97/03/12 M. Spike	GH1-12 008849 97 97/03/12 MS % Rec.
pH *via SW846 Method 9045*			-	-	-
Ash (550 °C) *via SM*	0.10	(%)	-	-	-
BTU *via ASTM D-240*	500	btu/lb	-	-	-
Moisture	0.01	(%)	-	-	-
Specific Gravity	0.001	g/cc	-	-	-
COD *via SM 5220*	1000	mg/kg	-	-	-
Sulphide *via SW846 Method 9030*	10.0	mg/kg	-	-	-
Cyanide*via SW846 Method 9010*	0.100	mg/kg	1.8	4.4	100
Sulphate *via EPA Method 300.0*	0.010	(%)	-	-	-
Metals via 7000 Series					
Arsenic (gfaa)	0.5	mg/kg	-	12	84
Lead (gfaa)	0.5	"	-	-	-
Mercury	0.04	"	-	-	-
Selenium (gfaa)	0.5	"	-	10	94
Metals via Sw846 Method 6010					
Silver	0.5	mg/kg	-	-	-
Barium	0.1	"	-	-	-
Cadmium	0.2	"	-	-	-
Copper	5	"	-	-	-
Iron	5	"	-	-	-
Manganese	5	"	-	-	-
Nickel	5	"	-	-	-
Lead	10	"	-	-	-
Sulphur	10	"	-	-	-
Zinc	5	"	-	-	-
OX *via SW846 Method 9020*	5	mg/kg	-	19	95
Ignitability *via SW846 Method 1010*	1	mm/min	-	-	-

Component	*Client ID:* / *Zenon ID:* / *Date Sampled:* MDL	Units	GH1-12 008849 97 97/03/12 MS Dup	GH1-12 008849 97 97/03/12 MSD % Rec.
pH *via SW846 Method 9045*			-	-
Ash (550 °C) *via SM*	0.10	(%)	-	-
BTU *via ASTM D-240*	500	btu/lb	-	-
Moisture	0.01	(%)	-	-
Specific Gravity	0.001	g/cc	-	-
COD *via SM 5220*	1000	mg/kg	-	-
Sulphide *via SW846 Method 9030*	10.0	mg/kg	-	-
Cyanide*via SW846 Method 9010*	0.100	mg/kg	3.6	46
Sulphate *via EPA Method 300.0*	0.010	(%)	-	-
Metals via 7000 Series				
Arsenic (gfaa)	0.5	mg/kg	-	-
Lead (gfaa)	0.5	"	-	-
Mercury	0.04	"	-	-
Selenium (gfaa)	0.5	"	-	-
Metals via Sw846 Method 6010				
Silver	0.5	mg/kg	-	-
Barium	0.1	"	-	-
Cadmium	0.2	"	-	-
Copper	5	"	-	-
Iron	5	"	-	-
Manganese	5	"	-	-
Nickel	5	"	-	-
Lead	10	"	-	-
Sulphur	10	"	-	-
Zinc	5	"	-	-
OX *via SW846 Method 9020*	5	mg/kg	-	-
Ignitability *via SW846 Method 1010*	1	mm/min	-	-

			Method	Blank	Blank	
	Client ID:		Blank	Spike #1	Spike #1	GH1-12
	Zenon ID:		008848 97	008848 97	008848 97	008849 97
	Date Sampled:		97/03/12	97/03/12	97/03/12	97/03/12
Component	**MDL**	**Units**			% recoveries	
Volatiles via SW846 Method 8260						
Acetone	0.030	mg/kg	<	0.27	110	27
Acrolein	0.010	"	<	0.51	100	<5.5
Acrylonitrile	0.010	"	<	0.51	100	<3.3
Benzene	0.005	"	<	0.27	110	380
Bromoform	0.010	"	<	0.24	96	<5.0
Bromomethane	0.010	"	<	0.24	94	<4.4
2-Butanone	0.015	"	<	0.25	99	57
Carbon Disulfide	0.010	"	<	0.26	110	<3.3
Carbon Tetrachloride	0.010	"	<	0.27	110	<3.3
Chlorobenzene	0.005	"	<	0.26	110	<2.8
Chlorodibromomethane	0.005	"	<	0.25	100	<2.8
Chloroethane	0.010	"	<	0.26	100	<2.2
2-Chloroethylvinylether	0.010	"	<	0.25	99	<3.3
Chloroform	0.005	"	<	0.28	110	<2.2
Chloromethane	0.010	"	<	0.25	98	<3.3
1,2-Dichlorobenzene	0.005	"	<	0.25	100	<2.2
1,3-Dichlorobenzene	0.005	"	<	0.25	99	<2.2
1,4-Dichlorobenzene	0.005	"	0.006	0.26	110	2.6
Dichlorobromomethane	0.005	"	<	0.27	110	<2.8
1,1-Dichloroethane	0.005	"	<	0.28	110	<2.8
1,2-Dichloroethane	0.005	"	<	0.26	100	8.1
1,1-Dichloroethene	0.010	"	<	0.25	100	<3.9
cis-1,2-Dichloroethene	0.010	"	<	0.26	100	<1.1
trans-1,2-Dichloroethene	0.010	"	<	0.26	110	<3.3
1,2-Dichloropropane	0.005	"	<	0.26	110	<2.2
cis-1,3-Dichloropropene	0.005	"	<	0.25	100	<2.2
trans-1,3-Dichloropropene	0.005	"	<	0.25	98	<2.2
Ethylbenzene	0.005	"	<	0.25	98	450
2-Hexanone	0.010	"	<	0.21	86	<5.5
Methylene Chloride	0.010	"	<	0.22	89	<5.5
4-Methyl-2-Pentanone	0.010	"	<	0.22	88	<3.9
Styrene	0.005	"	<	0.26	110	<2.2
1,1,1,2-Tetrachloroethane	0.010	"	<	0.25	98	<3.9
1,1,2,2-Tetrachloroethane	0.010	"	<	0.26	100	<3.9
Tetrachloroethene	0.020	"	<	0.25	100	<10
Toluene	0.005	"	<	0.25	100	550
1,1,1-Trichloroethane	0.005	"	<	0.26	100	<2.2
1,1,2-Trichloroethane	0.010	"	<	0.25	98	<3.9
Trichloroethene	0.005	"	<	0.24	96	<2.8
Vinyl Acetate	0.010	"	<	0.16	64	<3.3
Vinyl Chloride	0.010	"	<	0.27	110	<3.3
Xylenes(Total)	0.005	"	<	0.77	100	570
Surrogate Recoveries		%				
d4-1,2-Dichloroethane			91	102	102	95
d8-Toluene			99	106	106	101
Bromofluorobenzene			96	116	116	88

	Client ID:		Method Blank	Blank Spike #1	Blank Spike #1	Blank Spike #2	Blank Spike #2
	Zenon ID:		008848 97	008848 97	008848 97	008848 97	008848 97
	Date Sampled:		97/03/12	97/03/12	97/03/12	97/03/12	97/03/12
Component	**MDL**	**Units**			% recoveries		% recoveries
Semi Volatiles via SW846 Method 8270							
Phenol	0.11	mg/kg	<0.22	8.3	83	8.3	83
Bis(2-chloroethyl)ether	0.18	"	<0.36	-	-	-	-
2-Chlorophenol	0.27	"	<0.54	7.1	71	7.1	71
1,3-Dichlorobenzene	0.20	"	<0.40	-	-	-	-
1,4-Dichlorobenzene	0.20	"	<0.40	2.4	48	2.1	42
1,2-Dichlorobenzene	0.20	"	<0.40	-	-	-	-
Bis(2-chloroisopropyl)ether	0.15	"	<0.30	-	-	-	-
Hexachloroethane	0.20	"	<0.40	-	-	-	-
N-Nitroso-di-N-Propylamine	0.21	"	<0.42	3.3	65	3.1	62
Nitrobenzene	0.20	"	<0.40	-	-	-	-
Isophorone	0.40	"	<0.80	-	-	-	-
2-Nitrophenol	0.14	"	<0.28	-	-	-	-
2,4-Dimethylphenol	0.17	"	<0.34	-	-	-	-
Bis(2-chloroethoxy)methane	0.13	"	<0.26	-	-	-	-
2,4-Dichlorophenol	0.12	"	<0.24	-	-	-	-
1,2,4-Trichlorobenzene	0.20	"	<0.40	2.9	58	2.7	55
Naphthalene	0.03	"	<0.06	-	-	-	-
Hexachlorobutadiene	0.20	"	<0.40	-	-	-	-
4-Chloro-3-Methylphenol	0.14	"	<0.28	6.6	66	6.7	67
Hexachlorocyclopentadiene	0.20	"	<0.40	-	-	-	-
2,4,6-Trichlorophenol	0.12	"	<0.24	-	-	-	-
2-Chloronaphthalene	0.09	"	<0.18	-	-	-	-
Acenaphthylene	0.04	"	<0.08	-	-	-	-
Dimethyl phthalate	0.11	"	<0.22	-	-	-	-
2,6-Dinitrotoluene	0.06	"	<0.12	-	-	-	-
Acenaphthene	0.07	"	<0.14	3.6	72	3.9	77
2,4-Dinitrophenol	0.48	"	<0.96	-	-	-	-
2,4-Dinitrotoluene	0.05	"	<0.10	3.1	61	3.5	70
4-Nitrophenol	0.14	"	<0.28	6.9	69	5.8	58
Fluorene	0.03	"	<0.06	-	-	-	-
4-Chlorophenylphenylether	0.09	"	<0.18	-	-	-	-
Diethyl phthalate	0.11	"	<0.22	-	-	-	-
4,6-Dinitro-2-methylphenol	0.15	"	<0.30	-	-	-	-
N-Nitrosodiphenylamine	0.19	"	<0.38	-	-	-	-
4-Bromophenylphenylether	0.03	"	<0.06	-	-	-	-
Hexachlorobenzene	0.20	"	<0.40	-	-	-	-
Pentachlorophenol	0.11	"	<0.22	8.3	83	3.5	35
Phenanthrene	0.03	"	<0.06	-	-	-	-
Anthracene	0.02	"	<0.04	-	-	-	-
Di-n-butyl phthalate	0.11	"	0.23	-	-	-	-
Fluoranthene	0.02	"	<0.04	-	-	-	-
Pyrene	0.03	"	<0.06	4.0	81	4.5	91
Benzyl butyl phthalate	0.06	"	<0.12	-	-	-	-
3,3-Dichlorobenzidine	0.10	"	<0.20	-	-	-	-
Benzo(a)anthracene	0.02	"	<0.04	-	-	-	-
Chrysene	0.03	"	<0.06	-	-	-	-

	Client ID:		Method Blank	Blank Spike #1	Blank Spike #1	Blank Spike #2	Blank Spike #2
	Zenon ID:		008848 97	008848 97	008848 97	008848 97	008848 97
	Date Sampled:		97/03/12	97/03/12	97/03/12	97/03/12	97/03/12
Component	**MDL**	**Units**			% recoveries		% recoveries
Bis(2-ethylhexyl)phthalate	0.14	"	<0.28	-	-	-	-
Di-n-octyl phthalate	0.11	"	<0.22	-	-	-	-
Benzo(b)fluoranthene	0.04	"	<0.08	-	-	-	-
Benzo(k)fluoranthene	0.04	"	<0.08	-	-	-	-
Benzo(a)pyrene	0.05	"	<0.10	-	-	-	-
Indeno(1,2,3-cd)pyrene	0.06	"	<0.12	-	-	-	-
Dibenzo(a,h)anthracene	0.04	"	<0.08	-	-	-	-
Benzo(ghi)perylene	0.04	"	<0.08	-	-	-	-
N-Nitrosodimethylamine	1.0	"	<2.0	-	-	-	-
Aniline	0.50	"	<1.0	-	-	-	-
Benzyl alcohol	0.50	"	<1.0	-	-	-	-
Carbazole	0.50	"	<1.0	-	-	-	-
2-Methylphenol	0.50	"	<1.0	-	-	-	-
Benzoic acid	0.50	"	<1.0	-	-	-	-
4-Chloroaniline	0.50	"	<1.0	-	-	-	-
2-Methylnaphthalene	0.10	"	<0.20	-	-	-	-
2,4,5-Trichlorophenol	0.10	"	<0.20	-	-	-	-
2-Nitroaniline	0.50	"	<1.0	-	-	-	-
3-Nitroaniline	0.50	"	<1.0	-	-	-	-
Dibenzofuran	0.50	"	<1.0	-	-	-	-
Benzidine	0.50	"	<1.0	-	-	-	-
4-Nitroaniline	0.50	"	<1.0	-	-	-	-
Surrogate Recoveries		%					
2-Fluorophenol			64	57	57	53	53
d5-Phenol			87	80	80	74	74
d5-Nitrobenzene			54	38	38	43	43
2-Fluorobiphenyl			86	68	68	75	75
2,4,6-Tribromophenol			81	80	80	73	73
d14-p-Terphenyl			100	90	90	101	101

	Client ID:		GH1-12	GH1-12
	Zenon ID:		008849 97	008849 97
	Date Sampled:		97/03/12	97/03/12
Component	**MDL**	**Units**		Duplicate
Semi Volatiles via SW846 Method 8270				
Phenol	0.11	mg/kg	<220	<220
Bis(2-chloroethyl)ether	0.18	"	<360	<360
2-Chlorophenol	0.27	"	<540	<540
1,3-Dichlorobenzene	0.20	"	<400	<400
1,4-Dichlorobenzene	0.20	"	<400	<400
1,2-Dichlorobenzene	0.20	"	<400	<400
Bis(2-chloroisopropyl)ether	0.15	"	<300	<300
Hexachloroethane	0.20	"	<400	<400
N-Nitroso-di-N-Propylamine	0.21	"	<420	<420
Nitrobenzene	0.20	"	<400	<400
Isophorone	0.40	"	<800	<800
2-Nitrophenol	0.14	"	<280	<280
2,4-Dimethylphenol	0.17	"	<340	<340
Bis(2-chloroethoxy)methane	0.13	"	<260	<260
2,4-Dichlorophenol	0.12	"	<240	<240
1,2,4-Trichlorobenzene	0.20	"	<400	<400
Naphthalene	0.03	"	49000	53000
Hexachlorobutadiene	0.20	"	<400	<400
4-Chloro-3-Methylphenol	0.14	"	<280	<280
Hexachlorocyclopentadiene	0.20	"	<400	<400
2,4,6-Trichlorophenol	0.12	"	<240	<240
2-Chloronaphthalene	0.09	"	<180	<180
Acenaphthylene	0.04	"	9200	9700
Dimethyl phthalate	0.11	"	<220	<220
2,6-Dinitrotoluene	0.06	"	<120	<120
Acenaphthene	0.07	"	7300	8100
2,4-Dinitrophenol	0.48	"	<960	<960
2,4-Dinitrotoluene	0.05	"	<100	<100
4-Nitrophenol	0.14	"	<10	<280
Fluorene	0.03	"	9500	10000
4-Chlorophenylphenylether	0.09	"	<180	<180
Diethyl phthalate	0.11	"	<220	<220
4,6-Dinitro-2-methylphenol	0.15	"	<300	<300
N-Nitrosodiphenylamine	0.19	"	<380	<380
4-Bromophenylphenylether	0.03	"	<60	<60
Hexachlorobenzene	0.20	"	<400	<400
Pentachlorophenol	0.11	"	<220	<220
Phenanthrene	0.03	"	30000	31000
Anthracene	0.02	"	6400	7800
Di-n-butyl phthalate	0.11	"	<220	<220
Fluoranthene	0.02	"	7600	8800
Pyrene	0.03	"	15000	15000
Benzyl butyl phthalate	0.06	"	<120	<120
3,3-Dichlorobenzidine	0.10	"	<200	<200
Benzo(a)anthracene	0.02	"	4400	4700
Chrysene	0.03	"	4200	4600

	Client ID:		GH1-12	GH1-12
	Zenon ID:		008849 97	008849 97
	Date Sampled:		97/03/12	97/03/12
Component	MDL	Units		Duplicate
Bis(2-ethylhexyl)phthalate	0.14	"	270	270
Di-n-octyl phthalate	0.11	"	<220	<220
Benzo(b)fluoranthene	0.04	"	1900	1900
Benzo(k)fluoranthene	0.04	"	1700	1800
Benzo(a)pyrene	0.05	"	3400	3500
Indeno(1,2,3-cd)pyrene	0.06	"	1200	1300
Dibenzo(a,h)anthracene	0.04	"	310	350
Benzo(ghi)perylene	0.04	"	1300	1300
N-Nitrosodimethylamine	1.0	"	<2000	<2000
Aniline	0.50	"	<1000	<1000
Benzyl alcohol	0.50	"	<1000	<1000
Carbazole	0.50	"	<1000	<1000
2-Methylphenol	0.50	"	<1000	<1000
Benzoic acid	0.50	"	<1000	<1000
4-Chloroaniline	0.50	"	<1000	<1000
2-Methylnaphthalene	0.10	"	37000	40000
2,4,5-Trichlorophenol	0.10	"	<200	<200
2-Nitroaniline	0.50	"	<1000	<1000
3-Nitroaniline	0.50	"	<1000	<1000
Dibenzofuran	0.50	"	2500	2400
Benzidine	0.50	"	<1000	<1000
4-Nitroaniline	0.50	"	<1000	<1000
Surrogate Recoveries		%		
2-Fluorophenol			DIL	DIL
d5-Phenol			DIL	DIL
d5-Nitrobenzene			DIL	DIL
2-Fluorobiphenyl			DIL	DIL
2,4,6-Tribromophenol			DIL	DIL
d14-p-Terphenyl			DIL	DIL

Batch Code:	**0320MSB1**	
Soil pH measured in water	008849 97	
Date analysed:	97/03/20	
Date prepared:	97/03/20	
Batch Code:	**0321SPA1**	
Ash (550 °C)	008848 97	
	008849 97	
Date analysed:	97/03/21	
Date prepared:	97/03/21	
Batch Code:	**0324SPA1**	
Heat Value	008849 97	
Date analysed:	97/03/24	
Date prepared:	97/03/24	
Batch Code:	**0321SPA1**	
Moisture	008848 97	
	008849 97	
Date analysed:	97/03/21	
Date prepared:	97/03/21	
Batch Code:	**0325MSA1**	
Specific Gravity	008848 97	
	008849 97	
Date analysed:	97/03/25	
Date prepared:	97/03/25	
Batch Code:	**0325MNA1**	
COD	008849 97	
Date analysed:	97/03/25	
Date prepared:	97/03/25	
Batch Code:	**0325MNA1**	
Acid-Soluble Sulphide	008848 97	
	008849 97	
Date analysed:	97/03/25	
Date prepared:	97/03/25	
Batch Code:	**0325RJA1**	
Cyanide total	008848 97	
	008849 97	
Date analysed:	97/03/25	
Date prepared:	97/03/25	
Batch Code:	**0325MNA1**	**0324SPA1**
Total Sulphate	008848 97	008849 97
Date analysed:	97/03/25	97/03/25
Date prepared:	97/03/25	97/03/24

Batch Code:	**0324ASD1**
Arsenic (gfaa)	008848 97
	008849 97
Date analysed:	97/03/24
Date prepared:	97/03/24
Batch Code:	**0324ASD1**
Lead (gfaa)	008848 97
	008849 97
Date analysed:	97/03/25
Date prepared:	97/03/24
Batch Code:	**0324NRA1**
Mercury	008848 97
	008849 97
Date analysed:	97/03/24
Date prepared:	97/03/24
Batch Code:	**0324ASD1**
Selenium (gfaa)	008848 97
	008849 97
Date analysed:	97/03/24
Date prepared:	97/03/24
Batch Code:	**0324ASD1**
Metals	008848 97
	008849 97
Date analysed:	97/03/25
Date prepared:	97/03/24
Batch Code:	**0320SPA1**
Ignitability	008849 97
Date analysed:	97/03/20
Date prepared:	97/03/20
Batch Code:	**0324SM01**
Volatiles	008848 97
	008849 97
Date analysed:	97/03/24
Date prepared:	97/03/24
Batch Code:	**0319VC01**
Semi Volatiles	008848 97
	008849 97
Date analysed:	97/03/21
Date prepared:	97/03/19

Batch Code:	**0320MSB1**		
Soil pH measured in water	008849 97		
Date analysed:	97/03/20		
Date prepared:	97/03/20		
Batch Code:	**0321SPA1**		
Ash (550 °C)	008848 97		
	008849 97		
Date analysed:	97/03/21		
Date prepared:	97/03/21		
Batch Code:	**0324SPA1**		
Heat Value	008849 97		
Date analysed:	97/03/24		
Date prepared:	97/03/24		
Batch Code:	**0321SPA1**		
Moisture	008848 97		
	008849 97		
Date analysed:	97/03/21		
Date prepared:	97/03/21		
Batch Code:	**0325MSA1**		
Specific Gravity	008848 97		
	008849 97		
Date analysed:	97/03/25		
Date prepared:	97/03/25		
Batch Code:	**0325MNA1**		
COD	008849 97		
Date analysed:	97/03/25		
Date prepared:	97/03/25		
Batch Code:	**0325MNA1**		
Acid-Soluble Sulphide	008848 97		<10
	008849 97		
Date analysed:	97/03/25		
Date prepared:	97/03/25		
Batch Code:	**0325RJA1**		
Cyanide total	008848 97		
	008849 97		
Date analysed:	97/03/25		
Date prepared:	97/03/25		
Batch Code:	**0325MNA1**	**0324SPA1**	
Total Sulphate	008848 97	008849 97	
Date analysed:	97/03/25	97/03/25	
Date prepared:	97/03/25	97/03/24	

Batch Code:	**0324ASD1**
Arsenic (gfaa)	008848 97
	008849 97
Date analysed:	97/03/24
Date prepared:	97/03/24
Batch Code:	**0324ASD1**
Lead (gfaa)	008848 97
	008849 97
Date analysed:	97/03/25
Date prepared:	97/03/24
Batch Code:	**0324NRA1**
Mercury	008848 97
	008849 97
Date analysed:	97/03/24
Date prepared:	97/03/24
Batch Code:	**0324ASD1**
Selenium (gfaa)	008848 97
	008849 97
Date analysed:	97/03/24
Date prepared:	97/03/24
Batch Code:	**0324ASD1**
Metals	008848 97
	008849 97
Date analysed:	97/03/25
Date prepared:	97/03/24
Batch Code:	**0320SPA1**
Ignitability	008849 97
Date analysed:	97/03/20
Date prepared:	97/03/20
Batch Code:	**0324SM01**
Volatiles	008848 97
	008849 97
Date analysed:	97/03/24
Date prepared:	97/03/24
Batch Code:	**0319VC01**
Semi Volatiles	008848 97
	008849 97
Date analysed:	97/03/21
Date prepared:	97/03/19

"stody Record

ENVIRONMENTAL

...Bank Road
... Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(618) 281-5120 Fax
(618) 281-8933 Bulletin Board

COC Serial No. B4311

Project Name: CH-MGP CT Invest. Project Mgr.: Steve Bronski
Project Number: 17246 Phase • Task: 3000.77
Sampler(s): Stu Cravens (Philip Env.)
Laboratory Name: Zenon
Location:

Analyses by Method Name and Number

Temperature upon Receipt

Sample Number and (depth)	Date	Time	Soil	Water	Air	Wipes	Other *	Total Number of Containers	Analyses	Comments (Field PID)	Lab ID #'s
GH1-12	3-12-97	1400					X	5	Warmed. 1L X 3, 250, 500P.	Hold for assignment of analyses. Call Steve Bronski, Columbia office.	
									need TCLP TCSV TCVOL	Darrell (Wolf) added TCLP Cd, Cr, Pb - send data CAB. 970408	

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Volatile Organics .... Hydrochloric acid (HCl)
- ☐ TPH (8015) .... Hydrochloric acid (HCl)
- ☐ TPH (418.1) .... Hydrochloric acid (HCl)
- ☒ Metals .... Nitric acid (HNO_3)
- ☐ Cyanide .... Sodium hydroxide (NaOH)
- ☐ Other (Specify) ....

Lab Directives:

Requested TAT: ☐ 1-3 Days ☐ 5 Days ☐ 10 Days ☒ Other
Fax and/or Mail Results to: Paul Anderson, Philip
Send Invoice to:
QC Deliverable Requested: ☐ Results + QC ☐ Level 3 ☐ Other
Special Guidelines:
Reporting Limits:
* Special: COAL TAR

Shipping:

Carrier / Airbill No.
Fed Ex / 8314916816

Relinquished by:

Signature	Date	Time
[signature]	3-12-97	1600

Received by:

Signature	Date	Time
Ancy Sebastian	97/03/13	11:20 AM

Distribution: WHITE to Lab CANARY to PM PINK to QA/QC GREEN to Sampler

PE-179 (3/96)

Shaded Areas to be Completed by Lab

ZENON LABORATORIES

5555 North Service Road
Burlington, Ontario, Canada L7L 5H7
Tel: (905) 332-8788
Fax: (905) 332-9169

Certificate of Analysis

CLIENT INFORMATION

Attention:	Steve Bronskill
Client Name:	Philip Environmental Services
Project:	17246
Project Desc:	CH-MGPCT Invest.
Address:	210 West Sand Bank Road, P.O. Box 230 Columbia, IL 62236-0230
Fax Number:	618-281-5120
Phone Number:	618-281-7173

LABORATORY INFORMATION

Contact:	Ada Blythe, B.Sc., C.Chem.
Project:	AN970220
Date Received:	97/03/13
Date Reported:	97/03/25
Submission No.:	7C0330
Sample No.:	008846-008847

NOTES: *'-' = not analysed '<' = less than Method Detection Limit (MDL) 'NA' = no data available*
LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by Zenon are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Seventeenth Edition. Other methods are based on the principles of MISA or EPA methodologies.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at Zenon for a period of three weeks from receipt of data or as per contract.

COMMENTS:

Certified by:

Zenon Environmental Laboratories - Certificate of Analysis

			Method Blank	Blank Spike	Blank Spike
	Client ID:		Blank	Spike	Spike
	Zenon ID:		008846 97	008846 97	008846 97
	Date Sampled:		97/03/12	97/03/12	97/03/12
Component	MDL	Units		M. Spike	MS % Rec.
TSS *via EPA 160.0*	2.0	mg/L	<	-	-
Cyanide, total via Method 9012					
Cyanide total	0.002	mg/L	<	0.050	99
7000 Series Methods					
Arsenic (gfaa)	0.0020	mg/L	<	0.056	100
Mercury	0.05	ug/L	<	1.1	110
Selenium (gfaa)	0.0020	mg/L	<	0.054	95
Metals via SW846 Method 6010					
Silver	0.005	mg/L	<0.006	0.55	100
Barium	0.001		<	1.1	100
Cadmium	0.002		<	0.53	97
Copper	0.006		<0.007	1.1	97
Iron	0.010		<0.011	13	100
Manganese	0.006		<0.007	1.1	100
Nickel	0.010		<0.011	0.56	100
Zinc	0.010		<0.011	2.2	99
Lead via SW846 Method 7421					
Lead (gfaa)	0.0010	mg/L	0.0019	0.024	100
Oil and Grease via EPA 413.1, mod.					
Total Oil & Grease	1		<	-	-
BTEX via SW846 Method 8260					
Benzene	1.0	ug/L	<	49	97
Toluene	1.0		<	46	83
Ethylbenzene	1.0		<	46	91
m&p-Xylene	1.0		<	92	92
o-Xylene	1.0		<	44	88
Surrogate Recoveries		%			
d4-1,2-Dichloroethane			92	93	93
d8-Toluene			98	100	100
Bromofluorobenzene			87	94	94

			GH1	GH1	GH1	GH1	GH1	GH1
	Client ID:		03(3')	03(3')	03(3')	03(3')	03(3')	03(3')
	Zenon ID:		008847 97	008847 97	008847 97	008847 97	008847 97	008847 97
	Date Sampled:		97/03/12	97/03/12	97/03/12	97/03/12	97/03/12	97/03/12
Component	MDL	Units		Duplicate	M. Spike	MS % Rec.	MS Dup	MSD % Rec.
TSS *via EPA 160.0*	2.0	mg/L	7.0	-	-	-	-	-
Cyanide, total via Method 9012								
Cyanide total	0.002	mg/L	0.032	0.032	0.080	96	0.082	100
7000 Series Methods								
Arsenic (gfaa)	0.0020	mg/L	<	<	0.057	100	-	-
Mercury	0.05	ug/L	<	-	-	-	-	-
Selenium (gfaa)	0.0020	mg/L	<	<	0.060	110	-	-
Metals via SW846 Method 6010								
Silver	0.005	mg/L	<0.006	<0.006	0.60	110	-	-
Barium	0.001		0.018	0.018	1.2	110	-	-
Cadmium	0.002		<	<	0.58	110	-	-
Copper	0.006		0.008	<0.007	1.2	110	-	-
Iron	0.010		1.8	1.9	15	100	-	-
Manganese	0.006		0.11	0.11	1.3	110	-	-
Nickel	0.010		<0.011	<0.011	0.61	110	-	-
Zinc	0.010		0.15 J	0.039 J	2.4	110	-	-
Lead via SW846 Method 7421								
Lead (gfaa)	0.0010	mg/L	0.0067 J	0.0025 J	0.031	120	-	-
Oil and Grease via EPA 413.1, mod.								
Total Oil & Grease	1		5.0	-	-	-	-	-
BTEX via SW846 Method 8260								
Benzene	1.0	ug/L	10	-	-	-	-	-
Toluene	1.0		3.0	-	-	-	-	-
Ethylbenzene	1.0		<	-	-	-	-	-
m&p-Xylene	1.0		4.5	-	-	-	-	-
o-Xylene	1.0		14	-	-	-	-	-
Surrogate Recoveries		%						
d4-1,2-Dichloroethane			92	-	-	-	-	-
d8-Toluene			100	-	-	-	-	-
Bromofluorobenzene			88	-	-	-	-	-

Batch Code:	**0317SPA1**
TSS	008846 97
	008847 97
Date analysed	97/03/17
Date prepared	97/03/17
Batch Code:	**0318RJA1**
Cyanide total	008846 97
	008847 97
Date analysed	97/03/18
Date prepared	97/03/18
Batch Code:	**0320ASI1**
Arsenic (gfaa)	008846 97
	008847 97
Date analysed	97/03/24
Date prepared	97/03/20
Batch Code:	**0320ASA1**
Mercury	008846 97
	008847 97
Date analysed	97/03/20
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Selenium (gfaa)	008846 97
	008847 97
Date analysed	97/03/24
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Metals	008846 97
	008847 97
Date analysed	97/03/21
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Barium	008846 97
	008847 97
Date analysed	97/03/21
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Cadmium	008846 97
	008847 97
Date analysed	97/03/21
Date prepared	97/03/20

Batch Code:	**0320ASI1**
Copper	008846 97
	008847 97
Date analysed	97/03/21
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Iron	008846 97
	008847 97
Date analysed	97/03/21
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Manganese	008846 97
	008847 97
Date analysed	97/03/21
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Nickel	008846 97
	008847 97
Date analysed	97/03/21
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Zinc	008846 97
	008847 97
Date analysed	97/03/21
Date prepared	97/03/20
Batch Code:	**0320ASI1**
Lead (gfaa)	008846 97
	008847 97
Date analysed	97/03/25
Date prepared	97/03/20
Batch Code:	**0324LB01**
Oil (mineral)	008846 97
	008847 97
Date analysed	97/03/24
Date prepared	97/03/24
Batch Code:	**0318SM01**
BTEX	008846 97
	008847 97
Date analysed	97/03/18
Date prepared	97/03/18

ZENON LABORATORIES

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Burlington, Ontario, Canada L7L 5H7
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Certificate of Analysis

CLIENT INFORMATION

Attention:	Steve Bronskill
Client Name:	Philip Environmental Services
Project:	17246
Project Desc:	CH-MGPCT Invest.
Address:	210 West Sand Bank Road, P.O. Box 230 Columbia, IL 62236-0230
Fax Number:	618-281-5120
Phone Number:	618-281-7173

LABORATORY INFORMATION

Contact:	Ada Blythe, B.Sc., C.Chem.
Project:	AN970220
Date Received:	97/03/13
Date Reported:	97/04/07
Submission No.:	7C0330
Sample No.:	008839-008845

NOTES: *"-' = not analysed '<' = less than Method Detection Limit (MDL) 'NA' = no data available*
LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

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COMMENTS:

Revised report for Naphthalene

"NS" = Not spiked

Certified by:

Zenon Environmental Laboratories - Certificate of Analysis

			Method	Blank	% Recovery	CHPH	CHPH	CHPH	CHPH	CHPH	CHTP1
	Client ID:		Blank	Spike		300-05(11')	303-05(10')	303-06(15')	306-03(15')	307-01(5')	5(5')
	Zenon ID:		008839 97	008839 97	008839 97	008840 97	008841 97	008842 97	008843 97	008844 97	008845 97
	Date Sampled:		97/03/10	97/03/10	97/03/10	97/03/10	97/03/11	97/03/11	97/03/11	97/03/11	97/03/12
Component	**MDL**	**Units**									
Volatiles via SW846 Method 8260											
Benzene	0.005	mg/kg	<	0.26	100	0.040	<	<	<	<0.050	<0.050
Toluene	0.005	"	<	0.25	99	0.073	<	<	<	0.059 J	0.069
Ethylbenzene	0.005	"	<	0.25	98	9.5	<	0.005	<	4.5 J	6.5
m&p-Xylene	0.005	"	<	0.49	98	3.4	<	<	<	<0.050	<0.050
o-Xylene	0.005	"	<	0.25	100	6.0	<	0.021	<	0.56 J	1.1
Naphthalene	0.005	"	<	NS	-	0.20	<	0.056	0.014	0.81	2.4
Surrogate Recoveries		%									
d4-1,2-Dichloroethane			100	101	101	97	101	101	100	98	90
d8-Toluene			110	104	104	106	101	104	100	(125)	110
Bromofluorobenzene			101	94	94	95	93	99	94	89	90

Component	MDL	Units		
Batch Code:			**0317SM01**	**0318SM01**
Benzene	0.005	mg/kg	<	<
Toluene	0.005	"	<	<
Ethylbenzene	0.005	"	<	<
m&p-Xylene	0.005	"	<	<
o-Xylene	0.005	"	<	<
Surrogate Recoveries		%		
d4-1,2-Dichloroethane			100	92
d8-Toluene			110	98
Bromofluorobenzene			101	87

ZEL Summary of Analysis Pre. Dates

Batch Code:	**0317SM01**	**0318SM01**
Volatiles	008839 97	008840 97
	008841 97	008844 97
	008842 97	008845 97
	008843 97	
Date analysed	97/03/17	97/03/18
Date prepared	97/03/17	97/03/18

PHILIP ENVIRONMENTAL

Chain of Custody Record

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(618) 281-5120 Fax
(618) 281-8933 Bulletin Board

COC Serial No. B4309

9 +

Project Name CH-MGPCT Invest. Project Mgr. Steve Bronstein

Project Number 17246 Phase • Task 3000.77

Sampler(s) Stv Cravens (Philip Env.)

Laboratory Name Zenon

Location

Sample Number and (depth)	Date	Time	Matrix: Soil	Water	Air	Wipes	Other *	Total Number of Containers	BTEX/Meth. (8260)	BTEX (8260)	TSS	Cyanide	Metals *	F.U.G.				Comments (Field PID)	Lab ID #'s
CHPH 300-05 (11')	3-10-97	1140	X					2	2		00	8840					5 ox 2		
CHPH 303-05 (10')	3-11-97	0900	X					2	2										
CHPH 303-06 (15')	3-11-97	0915	X					2	2										
CHPH 306-03 (15')	3-11-97	1540	X					2	2										
CHPH 307-01 (5')	3-11-97	1610	X					2	2										
CHTP 1-05 (5')	3-12-97	1020	X					2	2										
GH 1-03 W (3')	3-12-97	1245		X				8		3	1	1	1	1			1L, 500P, 250, 40x8, ft.		

Temperature upon Receipt

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

☒	Volatile Organics	Hydrochloric acid	(HCl)
☐	TPH (8015)	Hydrochloric acid	(HCl)
☐	TPH (418.1)	Hydrochloric acid	(HCl)
☒	Metals	Nitric acid	(HNO_3)
☒	Cyanide	Sodium hydroxide	(NaOH)
☐	Other (Specify)		

Lab Directives:

Requested TAT: ☐ 1-3 Days ☐ 5 Days ☒ 10 Days ☐ Other

Fax and/or Mail Results to: Paul Anderson

Send Invoice to:

QC Deliverable Requested: ☐ Results + QC ☑ Level 3 ☐ Other

Special Guidelines: Metals- As, Ba, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Zn

Reporting Limits:

* Special:

Shipping:

Carrier / Airbill No.
Fed Ex / 831491 6820

Relinquished by:

Signature	Date	Time
	3-12-97	1400

Received by:

Signature	Date	Time
Amy Sebastian	97/03/19 AS	1:20p

Distribution: WHITE to Lab CANARY to PM PINK to QA/QC GREEN to Sampler

PE-179 (3/96)

Shaded Areas to be Completed by Lab

American Analytical Chemistry Laboratories Corp.

Value & Quality-Oriented Analytical Testing Services

Illinois Technology Center • 101 Tomaras Avenue • Savoy, Illinois 61874 • Phone: 217-352-6060 • Fax: 217-352-6052

REPORT OF ANALYSIS

Philip Environmental
1213 Dorchester
Champaign, IL 61821

Attn.: Mr. Stuart J. Cravens

Analysis Requested: BOD

Sample No: 1

Project No.: NA
Lab ID: 97-10054
Matrix: Water
Date Sampled: 03/12/97
Date Received: 03/12/97
Date Report: 03/18/97

Parameter	Result (mg/L)	Method	Detection Limit (mg/L)
BOD	10 mg/L	SM 5210 B	2

Authorized By: Zehnder

Date: 3/18/97